

ML037/088

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2004 ANNUAL
GROUNDWATER SAMPLING
RESULTS
LISBON VALLEY COPPER
PROJECT

*Lisbon Valley Mining Company, LLC
2700 South Highway 191, Suite 2
PO Box 847
Moab, Utah 84532*

December 2004

LISBON VALLEY MINING CO., LLC

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Attachment A Field Sampling Data Sheets for Groundwater Samples

Attachment B Analytical Data QC Review and Laboratory Data Sheets

Lisbon Valley Mining Co., LLC. (LVMC) conducted groundwater sampling at its Lisbon Valley Copper Project site in October of 2004 to comply with the Ground Water Quality Discharge Permit (No. UGW370005) issued on January 16, 1997 by the State of Utah Water Quality Board. All monitoring wells are currently on an annual sampling schedule, as described in a February 5, 2002 letter to the Utah Department of Environmental Quality with approval received in a letter dated April 22, 2002.

Groundwater samples were collected from monitoring wells SLV1A, SLV2, SLV3, MW2A, 94MW2, MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13 from October 4 to 7, 2004 as part of the annual sampling schedule for these eleven wells. Well 94MW4 was bailed but could not be sampled because the well was nearly dry. A field duplicate sample was collected from monitoring well SLV3 on October 4, 2004. One field blank sample was collected near well MW96-7B on October 6, and one rinsate sample from the PVC bailer used at monitoring well MW97-12 was collected on October 5, 2004. The monitoring well locations are shown in Figure 1-1.

Samples were submitted to ACZ Laboratories, Inc. of Steamboat Springs, Colorado, for analysis of dissolved metals, wet chemistry (e.g., major anions and water quality parameters), and radiological parameters. The analytical methods and laboratory detection limits required by the permit are shown in Table 1-1.

This report contains the information required by Part II.G.1.b of the Permit and is organized as follows:

- Section 1.0 - Introduction - The purpose of the groundwater sampling is presented in this section.
- Section 2.0 - Groundwater Sample Collection - This section summarizes the field sampling activities conducted by LVMC during October 2004 for the annual sampling event.
- Section 3.0 - Quality Assurance/Quality Control (QA/QC) - This section discusses LVMC's review of the analytical data and qualifications to the laboratory results based on the QC review.
- Section 4.0 – 2004 Sampling Results - This section presents the laboratory analytical results for the groundwater samples and compares those results to either compliance levels, maximum calculated background levels, or Utah groundwater quality standards.
- Section 5.0 - Groundwater Levels - This section presents groundwater level data collected during the annual sampling event of 2004.

LEGEND

- SLV-2 UPPER AQUIFER MONITORING WELL (<=500 FT.)
- 94MW5 UPPER AQUIFER MONITORING WELL (DRY)
- MW97-13 LOWER (N-AQUIFER) MONITORING WELL (<1450 FT.)
- PAIRED UPPER AND LOWER AQUIFER MONITORING WELL
- PW97-1 PRODUCTION WELL
- PW96-7A PIEZOMETER
- PW97-1 PIEZOMETER
- 98R8 PRODUCTION WELL
- 98R8 PIEZOMETER

REF.	DESCRIPTION	DATE APPROVED
A		
B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		

1000
0
1000
2000
SCALE IN FEET

FIGURE 1-1
PROPOSED MINE FACILITIES AND
EXISTING MONITORING WELL LOCATIONS

LISBON VALLEY MINING COMPANY

DESIGNED	DATE	RE. D:\\4260\\CDW\\M97-1.Dwg	FIGURE NUMBER
			1-1

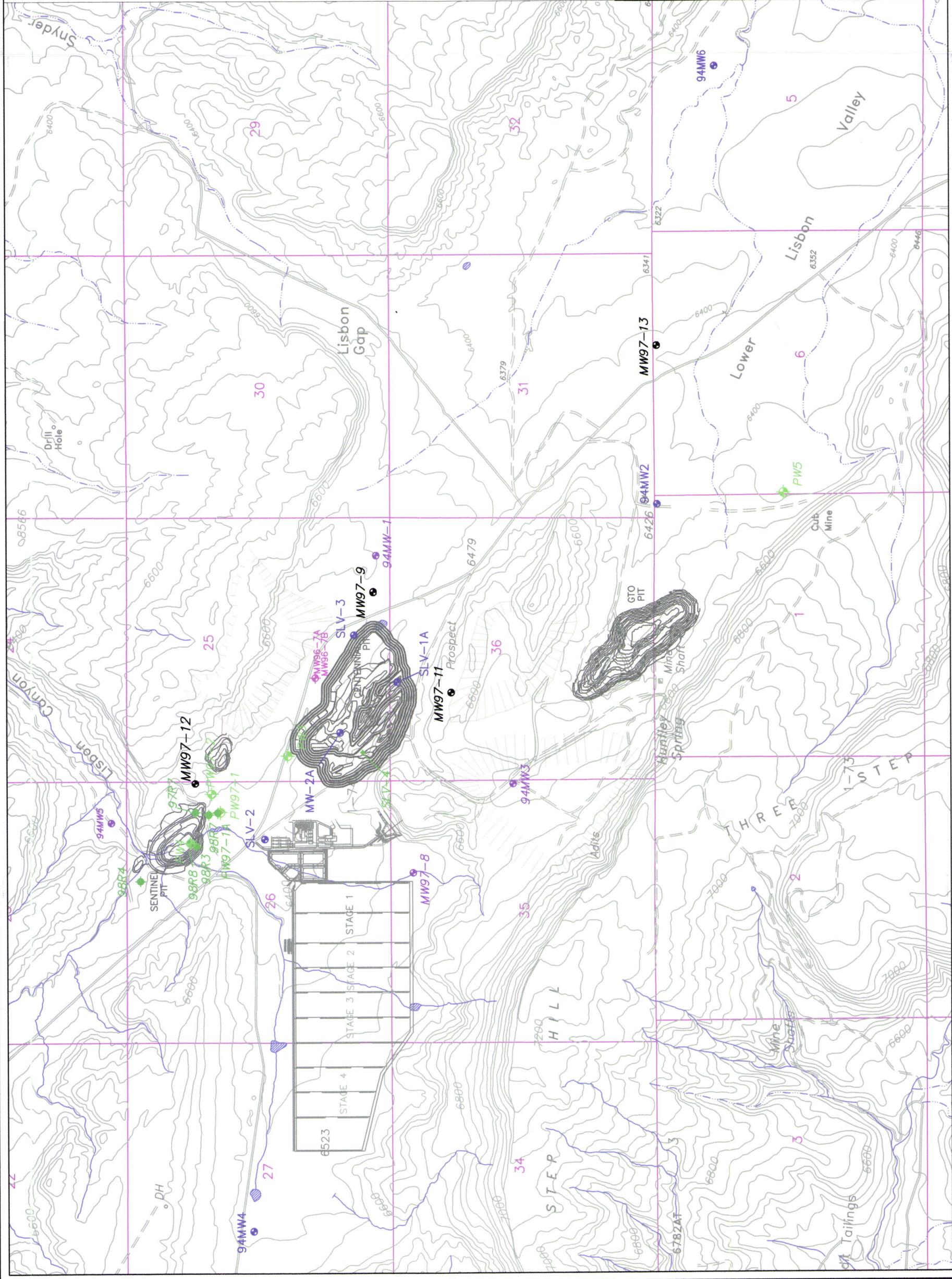


TABLE 1-1
GROUNDWATER SAMPLE ANALYTICAL METHODS
AND DETECTION LIMITS
Lisbon Valley Copper Project

Parameter	Laboratory Analytical Method ^(a)	Utah Groundwater Quality Discharge Permit Required Detection Limits ^(c)	Units
Dissolved Metals			
Aluminum	EPA 200.7	0.03 (b)	mg/L
Antimony	EPA 200.8	0.002	mg/L
Arsenic	EPA 200.8	0.005	mg/L
Barium	EPA 200.7	0.01	mg/L
Beryllium	EPA 200.8	0.001	mg/L
Cadmium	EPA 200.8	0.001	mg/L
Calcium	EPA 200.7	0.1 (b)	mg/L
Chromium	EPA 200.8	0.005	mg/L
Copper	EPA 200.7	0.01	mg/L
Iron	EPA 200.7	0.01 (b)	mg/L
Lead	EPA 200.8	0.005	mg/L
Magnesium	EPA 200.7	0.1 (b)	mg/L
Manganese	EPA 200.7	0.01	mg/L
Mercury	EPA 245.1	0.0002	mg/L
Molybdenum	EPA 200.7	0.1 (b)	mg/L
Nickel	EPA 200.7	0.01	mg/L
Potassium	EPA 200.7	0.05 (b)	mg/L
Selenium	SM3114 B	0.002	mg/L
Silicon	EPA 200.7	0.5 (b)	mg/L
Silver	EPA 200.8	0.002	mg/L
Sodium	EPA 200.7	0.1 (b)	mg/L
Thallium	EPA 200.8	0.001	mg/L
Vanadium	EPA 200.7	0.01	mg/L
Zinc	EPA 200.7	0.05	mg/L
Wet Chemistry			
Ammonia as NH ₃ -N	EPA 350.1	0.4 (b)	mg/L
Nitrate as NO ₃ -N	Calculation	0.02	mg/L
Nitrite as NO ₂ -N	EPA 353.2	0.01 (d)	mg/L
NO ₃ -N + NO ₂ -N	EPA 353.2	0.02	mg/L
Chloride	EPA 325.2	2. (b)	mg/L
Fluoride	SM4500F-C	0.3	mg/L
Sulfate	EPA 375.3	2. (b)	mg/L
pH	EPA 150.1		SI units
Conductivity	EPA 120.1	10. (b)	umhos/cm
Hardness as CaCO ₃	SM2340B	2. (b)	mg/L
TSS	EPA 160.2	1. (b)	mg/L
TDS	EPA 160.1	5	mg/L
Alkalinity as CaCO ₃	SM 2320B	1. (b)	mg/L
Bicarbonate, total	SM2320B	1. (b)	mg/L
Bicarbonate, diss.	SM 2320B	1. (b)	mg/L
Carbonate	SM 2320B	1. (b)	mg/L
Hydroxide	SM 2320B	1. (b)	mg/L
Radiological			
Gross Alpha	M9310	2	pCi/L
Gross Beta	M9310	4	pCi/L
Uranium, total	EPA 200.8	0.001	mg/L
Radium ²²⁶	M9315	1	pCi/L
Radium ²²⁸	M9320	1	pCi/L
Thorium ²³⁰	ESM 4506	1	pCi/L
Thorium ²³²	ESM 4506	1	pCi/L

TABLE 1-1
GROUNDWATER SAMPLE ANALYTICAL METHODS
AND DETECTION LIMITS
Lisbon Valley Copper Project

EPA = Environmental Protection Agency

SM = Standard Method

mg/L = milligrams per liter

umhos/cm = micromhos per centimeter

SI = standard international units

pCi/L = picocuries per liter

MDL = method detection limit

- (a) The listed laboratory analytical method was used by the Utah-certified laboratory which analyzed the samples for this sampling event. The Ground Water Quality Discharge Permit (No. UGW370005) does not require specific analytical methods.
- (b) No required method detection limit (MDL) is defined in Table 1, Part II of the Ground Water Quality Discharge Permit (No. UGW370005), value shown is typical MDL.
- (c) As defined in Table 1, Part II of the State of Utah Ground Water Quality Discharge Permit No. UGW370005, dated 16 January 1997.
- (d) An MDL of 0.005 mg/L is specified in Table 1, Part II of the Ground Water Quality Discharge Permit (No. UGW370005), however the laboratory currently achieves an MDL of 0.01 mg/L for nitrite. The state groundwater quality standard is 1.0 mg/L.

SECTION 2.0

Groundwater Sample Collection

Groundwater sampling was conducted in accordance with the Water Quality Monitoring, Quality Assurance/Quality Control (QA/QC) Plan (Appendix A of the mine's Ground Water Quality Discharge Permit). Prior to well purging and groundwater sampling, static water levels were measured in accordance with the Standard Operating Procedure for Water Level Measurement (Attachment 1 of the Water Quality Monitoring QA/QC Plan.)

Monitoring well purging, field instrument calibration, groundwater sample collection, and sample handling, documentation, and analysis were performed in accordance with the Standard Operating Procedure for Groundwater Sampling (Attachment 2 of the Water Quality Monitoring QA/QC Plan.)

Prior to sampling, a minimum of three casing volumes of water was purged from each well, except for SLV2, which was bailed dry after approximately two well volumes, and 94MW4 which could not be sampled due to an insufficient amount of groundwater. Field parameters (pH, temperature, and specific conductance) were measured during purging and recorded on field sampling data sheets, which are given in Attachment A of this report.

Samples for laboratory analysis were collected after three casing volumes of water were purged and field readings had stabilized to within 10 percent. The final field parameters (measured at the time of sampling) are presented in Table 2-1.

A wireline pump rig supplied by Rex Wyatt Drilling Company was used with assorted bailers to purge and sample the wells. Groundwater samples were collected from wells SLV1A, SLV2, MW2A, 94MW2 and MW96-7A using a 1.66" outer diameter (OD) polyvinyl chloride (PVC) bailer, while a 2.875" OD PVC bailer was used at well MW96-7B. A 1.90" OD PVC bailer was used to collect groundwater samples from wells MW97-9, MW97-11, MW97-12 and MW97-13. A submersible pump installed in well SLV3 was used to collect the sample from SLV3. The bailers were decontaminated with a pressure wash and potable water rinse, followed by a distilled water rinse between each purging and sampling event. Equipment decontamination was performed in accordance with Standard Operating Procedure for Equipment Decontamination, Attachment 3 of the Water Quality Monitoring QA/QC Plan.

Samples were collected in polyethylene bottles supplied by the laboratory (ACZ). Samples for dissolved metals analysis were filtered in the field using a peristaltic pump and disposable 0.45 µm in-line filters. After sample collection, the sample bottles were labeled and packaged in coolers with ice and security seals for shipment to the laboratory.

TABLE 2-1

SUMMARY OF FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER SAMPLES
Lisbon Valley Copper Project
October 1994 through October 2004

Well Number	Field Parameter	Date of Field Parameter Measurement	1994	March	May 1995	August 1995	November 1995	June 1996	September 1996	December 1996	March 1997	May 1997	June 1997	August 1997
	Field Parameter	Units	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
SLV1A	pH	SI	NM	NM ²	6.49	7.40	19.5	13.1	7.48	7.59	6.52	6.53	6.71	7.35
SLV1A	Temperature	°C	NM	NM	19.0	13.1	2760	3230	2650	3010	15.4	13.6	11.0	14.2
SLV1A	Specific Conductivity	umhos/cm	NM ²	NM ²	8.26	NM ²	8.39	7.91	8.36	7.98	7.84	7.42	2800	2580
SLV2	pH	SI	16.1	NM ³	15.1	14.2	15.8	590	12.6	13.9	7.74	8.02	7.91	NM ⁵
SLV2	Temperature	°C	NM	NM ³	445	400	665	590	480	475	495	460	420	510
SLV2	Specific Conductivity	umhos/cm	NM ²	NM ²	7.11	6.61	7.45	5.85	8.12	7.64	7.31	7.02	7.41	NM ⁵
MW2A	pH	SI	14.4	11.4	14.6	20.3	13.5	13.7	21.0	13.2	12.0	11.8	14.2	NM ⁵
MW2A	Temperature	°C	NM	NM ²	2560	2230	2710	1000	1980	1790	2050	1620	1320	1450
MW2A	Specific Conductivity	umhos/cm	NM ²	NM ²	6.92	NM ²	7.31	7.71	7.42	6.21	6.76	6.71	6.96	6.57
94MW2	pH	SI	15.1	14.0	14.1	19.4	12.3	12.3	14.8	13.2	12.0	11.0	14.4	NM ⁵
94MW2	Temperature	°C	NM	NM ¹	2800	2590	2850	2090	2380	1940	2130	2030	1910	1900
94MW2	Specific Conductivity	umhos/cm	NM ¹	NM ¹	7.56	7.16	7.50	7.76	7.74	7.43	6.69	6.81	7.17	7.52
94MW4	pH	SI	15.1	9.7	15.1	19.6	11.8	12.8	16.2	15.3	11.5	11.2	14.6	NM ⁵
94MW4	Temperature	°C	NM ¹	NM ¹	1008	NM ³	1300	960	1000	930	900	890	820	880
94MW4	Specific Conductivity	umhos/cm	NM ¹	NM ¹	NM ¹	NM ¹	8.28	7.44	8.08	8.30	8.39	8.73	8.61	8.47
94MW6	pH	SI	7.96	8.04	13.3	13.2	18.4	7.60	10.6	11.3	14.1	7.39	7.43	NM ⁴
94MW6	Temperature	°C	NM	NM	4830	4960	5160	4150	4160	3630	4090	4170	3820	NM ⁴
94MW6	Specific Conductivity	umhos/cm	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NM ⁴
MW96-7A	pH	SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.40	7.13	7.08
MW96-7A	Temperature	°C	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.9	12.0	10.8
MW96-7A	Specific Conductivity	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	1649	1320	1260
MW97-9	pH	SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.40	8.88	8.31
MW97-9	Temperature	°C	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.2	12.0	15.4
MW97-9	Specific Conductivity	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	1566	620	560
MW97-11	pH	SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-11	Temperature	°C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-11	Specific Conductivity	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-12	pH	SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-12	Temperature	°C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-12	Specific Conductivity	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-13	pH	SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-13	Temperature	°C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW97-13	Specific Conductivity	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-1

SUMMARY OF FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER SAMPLES
Lisbon Valley Copper Project
October 1994 through October 2004

Well Number	Field Parameter	Date of Field Parameter Measurement		November 1997	December 1997	January 1998	February 1998	March 1998	April 1998	May 1998	August 1998	October 1998	November 1998	May 1999	November 1999	May 1999	November 1999	May 1999	November 1999	May 2000
		Units	Results	Results	Results	Results	Results	Results												
SLV1A	pH	SI	NM ⁵	6.58	6.62	NM ⁵	NM ⁵	6.65	6.54	14.2	14.7	NM ⁵	6.69	6.83	15.1 ⁷	13.1	14.1	7.01	7.01	
SLV1A	Temperature	°C	NM ⁵	11.8	12.5	NM ⁵	NM ⁵	14.2	14.7	NM ⁵	NM ⁵	11.4	11.4	6.96	6.96	13.1	14.1	14.1	3800	
SLV2	pH	SI	NM ⁵	8.03	7.74	NM ⁵	NM ⁵	7.64	7.92	14.2	NM ⁵	7.89	7.83	19.2 ⁷	13.3	13.9	7.77	7.77	3800	
SLV2	Temperature	°C	NM ⁵	12.2	10.2	NM ⁵	NM ⁵	12.8	379	442	NM ⁵	NM ⁵	11.6	439	574	420	405	405	3800	
SLV3	pH	SI	NM ⁵	7.10	7.15	NM ⁵	NM ⁵	7.26	7.48	NM ⁵	NM ⁵	7.32	7.64	7.28	7.28	7.28	7.28	7.28	7.00	
SLV3	Temperature	°C	NM ⁵	13.1	13.2	NM ⁵	NM ⁵	13.8	14.6	NM ⁵	NM ⁵	12.4	12.4	15.7 ⁷	13.1	14.2	14.2	14.2	2300	
MW2A	pH	SI	NM ⁵	7.11	6.71	NM ⁵	NM ⁵	6.79	7.21	NM ⁵	NM ⁵	6.97	6.93	6.88	6.88	7.00	7.00	7.00	2300	
MW2A	Temperature	°C	NM ⁵	11.8	12.3	NM ⁵	NM ⁵	13.4	14.4	NM ⁵	NM ⁵	12.3	2040	2160	2160	2210	2210	2210	2300	
94MW2	pH	SI	NM ⁵	7.13	6.62	NM ⁵	NM ⁵	6.71	6.91	NM ⁵	NM ⁵	6.68	6.95	6.98	6.98	6.78	6.78	6.78	6.78	
94MW2	Temperature	°C	NM ⁵	12.0	13.0	NM ⁵	NM ⁵	14.8	16.4	NM ⁵	NM ⁵	12.5	12.5	15.4 ⁷	14.2	14.8	14.8	14.8	1070	
94MW4	pH	SI	NM ⁵	8.42	8.10	7.50	8.01	7.93	8.67	NM ⁶	NM ⁶	7.37	1030	1030	1030	723	723	723	1070	
94MW4	Temperature	°C	NM ⁵	12.2	13.1	13.4	16.5	16.6	16.6	NM ⁶	NM ⁶	NM ⁶	NM ⁶	NM ⁶	1070					
94MW6	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴													
94MW6	Temperature	°C	NM ⁴	873	990	562	562	563	641	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴					
MW96-7A	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴													
MW96-7A	Temperature	°C	2070	1900	1730	NM ⁵	NM ⁵	13.9	14.6	NM ⁵	NM ⁵	12.0	12.0	19.7 ⁷	13.9	14.1	14.1	14.1	1710	
MW96-7B	pH	SI	8.79	8.91	8.65	NM ⁵	NM ⁵	8.56	8.67	NM ⁵	NM ⁵	8.18	8.88	8.75	8.75	8.71	8.71	8.71	1710	
MW96-7B	Temperature	°C	15.1	15.8	17.5	NM ⁵	NM ⁵	18.7	18.8	NM ⁵	NM ⁵	15.9	15.9	22.1 ⁷	18.7	19.1	19.1	19.1	1710	
MW97-9	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴													
MW97-9	Temperature	°C	881	940	543	NM ⁵	NM ⁵	422	484	NM ⁵	NM ⁵	486	486	731	558	558	558	558	551	
MW97-11	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	477													
MW97-11	Temperature	°C	1450	16.1	16.0	17.3	17.3	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	477	
MW97-12	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	1260													
MW97-12	Temperature	°C	7.56	7.10	7.56	7.92	7.92	7.78	7.78	7.78	7.78	7.78	7.78	7.78	7.78	7.78	7.78	7.78	1260	
MW97-13	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	618													
MW97-13	Temperature	°C	16.0	16.2	18.7	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	618	
MW97-13	Specific Conductivity	umhos/cm	2060	1610	1310	1410	1480	1530	1410	1480	1530	1410	1480	1530	1421	1350	1350	1350	1240	

TABLE 2-1

SUMMARY OF FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER SAMPLES
Lisbon Valley Copper Project
October 1994 through October 2004

Well Number	Field Parameter	Date of Field Parameter Measurement		Results	Results	Results	Results	Results	Results
		2000	2001						
SLV1A	pH	SI	6.81	6.77	6.75	6.73	6.74	6.62	SI = standard international units
	Temperature	°C	12.5	14.1 ⁷	12.7 ⁷	14.4 ⁷	13.6 ⁷	12.6 ⁷	°C = degrees Celsius
	Specific Conductivity	umhos/cm	3640	3660	3950	3590	3590	3590	°F = degrees Fahrenheit
SLV2	pH	SI	8.00	7.92	7.55	7.86	7.85	8.06	umhos/cm = micromhos per centimeter
	Temperature	°C	11.1	13.8 ⁷	11.4 ⁷	14.8 ⁷	14.7 ⁷	14 ⁷	NA = not applicable
	Specific Conductivity	umhos/cm	427	710	762	651	656	652	NM = not measured
SLV3	pH	SI	7.20	6.96	6.67	6.94	6.75	6.67	1 not measured due to borehole being dry
	Temperature	°C	11.9	14.9	15.2 ⁷	15.4 ⁷	17.7 ⁷	15.8 ⁷	2 not measured due to pH meter malfunction
	Specific Conductivity	umhos/cm	2220	2130	2120	2100	2140	2060	3 not measured due to conductivity meter malfunction
MW2A	pH	SI	6.88	6.84	7.05	6.86	6.80	6.67	4 not measured since this well is not part of the sampling program outlined in the permit
	Temperature	°C	11.0	14.7	11.4 ⁷	14.5 ⁷	14.6 ⁷	13.4 ⁷	5 not measured since these wells were not on the accelerated sampling schedule
	Specific Conductivity	umhos/cm	2590	2580	3150	2770	2750	2620	6 not measured or sampled due to insufficient water in well
94MW2	pH	SI	6.93	6.73	6.70	6.74	6.71	6.32	7 measured in degrees Fahrenheit and converted to degrees Celsius
	Temperature	°C	11.9	14.1 ⁷	13.3 ⁷	15 ⁷	15.9 ⁷	15.4 ⁷	
	Specific Conductivity	umhos/cm	NM ⁶	NM ⁶	NM ⁶	NM ⁶	NM ⁶	NM ⁶	
94MW4	pH	SI	NM ⁶	NM ⁶	NM ⁶	NM ⁴	NM ⁴	NM ⁴	
	Temperature	°C	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	
	Specific Conductivity	umhos/cm	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	
94MW6	pH	SI	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	NM ⁴	
	Temperature	°C	11.9	17.4 ⁷	13.6 ⁷	16.5 ⁷	14.2 ⁷	13.6 ⁷	
	Specific Conductivity	umhos/cm	1680	1760	1684	1631	1680	1790	
MW96-7A	pH	SI	7.19	6.90	6.83	6.87	6.99	7.06	
	Temperature	°C	11.9	17.4 ⁷	13.6 ⁷	16.5 ⁷	14.2 ⁷	13.6 ⁷	
	Specific Conductivity	umhos/cm	1680	1760	1684	1631	1680	1790	
MW96-7B	pH	SI	8.85	8.28	8.55	8.75	8.73	7.48	
	Temperature	°C	17.3	20.9 ⁷	18.2 ⁷	19 ⁷	20.3 ⁷	19.4 ⁷	
	Specific Conductivity	umhos/cm	547	865	903	785	753	728	
MW97-9	pH	SI	7.96	7.68	7.67	7.87	7.17	7.17	
	Temperature	°C	17.1	18.2 ⁷	18.7 ⁷	20.4 ⁷	19.9 ⁷	15.8 ⁷	
	Specific Conductivity	umhos/cm	431	611	668	630	585	689	
MW97-11	pH	SI	7.37	7.29	7.17	6.95	6.99	6.52	
	Temperature	°C	15.0	18 ⁷	15.7 ⁷	17.3 ⁷	17.4 ⁷	15.3 ⁷	
	Specific Conductivity	umhos/cm	1190	1170	1254	1298	1130	1590	
MW97-12	pH	SI	7.62	7.86	7.58	7.47	7.38	7.68	
	Temperature	°C	17.3	19.8 ⁷	17.5 ⁷	17.9 ⁷	17.3 ⁷	17.7 ⁷	
	Specific Conductivity	umhos/cm	610	940	950	894	950	936	
MW97-13	pH	SI	7.62	7.22	7.42	7.64	7.20	7.15	
	Temperature	°C	14.5	17.9 ⁷	16.9 ⁷	18.2 ⁷	21.1 ⁷	19.3 ⁷	
	Specific Conductivity	umhos/cm	1160	1110	1134	1180	942	910	

SECTION 3.0

Quality Assurance/Quality Control

Results of QA/QC sample analyses by the laboratory were used to assess the precision and accuracy of the sampling and analytical protocols. The analytical QA/QC was reviewed to evaluate the quality of the data obtained. The review consisted of checking holding times, matrix spike/matrix spike duplicate recoveries, calibration recoveries, ICP metals check recoveries, method blanks, field blanks, field decontamination rinsate blanks, and field duplicate sample results. Analytical results have been qualified where appropriate (e.g., "FB" code for detected in field blank or field rinsate blank), based on the results of this review.

The laboratory data sheets, annotated with data validation qualifiers, are given in Attachment B, along with a summary of the QC review. Analytical results for the groundwater samples collected during the 2004 annual sampling event for the 11 monitoring wells sampled are presented in Table 3-1.

TABLE 3-1
GROUNDWATER ANALYTICAL RESULTS
Lisbon Valley Copper Project
October 2004

Well and Sample Number		SLV1A-04-1	SLV2-04-1	SLV3-04-1	SLV3-04-D	MW2A-04-1	94MW2-04-1
Sample Date		10/05/04	10/06/04	10/04/04	10/04/04	10/05/04	10/04/04
Parameter	Units	Result	Result	Result	Result	Result	Result
Dissolved Metals							
Aluminum	mg/L	0.06	U	0.03	U	0.03	U
Antimony	mg/L	0.0006	B	0.0005	B	0.0004	U
Arsenic	mg/L	0.001	U	0.0021	B	0.001	U
Barium	mg/L	0.009	B	0.046		0.009	B
Beryllium	mg/L	0.0002	U	0.0001	U	0.0002	U
Cadmium	mg/L	0.0153		0.0001	U	0.0006	B
Calcium	mg/L	460		56.3		303	
Chromium	mg/L	0.0008	B FB	0.0001	B FB	0.0007	B FB
Copper	mg/L	0.02	U	0.01	U	0.01	U
Iron	mg/L	0.98		0.01	U	1.86	
Lead	mg/L	0.0003	B	0.0001	U	0.0005	B
Magnesium	mg/L	205		23.6		95.4	
Manganese	mg/L	1.61		0.005	U	0.545	
Mercury	mg/L	0.0005	B FB	0.0003	B FB	0.0003	B FB
Molybdenum	mg/L	0.02	U	0.01	U	0.01	U
Nickel	mg/L	0.03	B	0.01	U	0.01	B
Potassium	mg/L	19.6		2.4		14.1	
Selenium	mg/L	0.001	U	0.001	U	0.001	U
Silicon	mg/L	10.1		17.4		8.8	
Silver	mg/L	0.0001	U	0.0003	U	0.0001	U
Sodium	mg/L	141		41.0		64.1	
Thallium	mg/L	0.0003	B	0.0001	U	0.0008	B
Vanadium	mg/L	0.01	U	0.005	U	0.005	U
Zinc	mg/L	0.4		0.01	B	0.48	
Wet Chemistry							
Ammonia as NH ₃ -N	mg/L	0.31	B	0.05	U	0.25	B
Nitrate as NO ₃ -N	mg/L	0.04	B	0.02	U	0.02	U
Nitrite as NO ₂ -N	mg/L	0.01	UH	0.01	UH	0.01	UH
NO ₃ -N + NO ₂ -N	mg/L	0.04	BH	0.02	UH	0.02	UH
Chloride	mg/L	108		12		19	
Fluoride	mg/L	0.5		0.4	B	0.4	B
Sulfate	mg/L	1830		140		910	
pH	SI units	7.1	H	7.7	H	7.3	H
Conductivity	umhos/cm	3630		614		2080	
Hardness as CaCO ₃	mg/L	1990		238		1150	
TSS	mg/L	336	H	900		12	BH
TDS	mg/L	3300	H	410		1740	H
Alkalinity as CaCO ₃	mg/L	455		181		399	
Bicarbonate, total	mg/L	455		181		399	
Bicarbonate, diss.	mg/L	455		181		399	
Carbonate	mg/L	2	U	2	U	2	U
Hydroxide	mg/L	2	U	2	U	2	U
Radiological							
Gross Alpha	pCi/L	111+/-32		19+/-6		62.3+/-14	
Gross Beta	pCi/L	54.7+/-18		13.9+/-4	FB	40.7+/-8.4	
Uranium, total	mg/L	0.0200		0.01360		0.0922	
Radium ²²⁶	pCi/L	9.2+/-0.7		0.74+/-0.2		7.69+/-0.6	
Radium ²²⁸	pCi/L	7.56+/-1.1		1.11+/-0.7	FB	1.91+/-0.7	FB
Thorium ²³⁰	pCi/L	0.16+/-0.38		-0.93+/-0.54		1.84+/-0.49	FB J
Thorium ²³²	pCi/L	0.05+/-0.33		-0.25+/-0.58		0.13+/-0.3	
						0.18+/-0.35	
						0.11+/-0.36	
						0.71+/-0.94	

U = not detected at value given
 B = detected at a value between method detection limit (MDL) and practical quantitation limit (PQL)
 H = analysis exceeded method hold time, therefore results are considered estimated
 J = estimated detected value
 FB = detected in field blank or field rinsate blank

TABLE 3-1

GROUNDWATER ANALYTICAL RESULTS
Lisbon Valley Copper Project
October 2004

Well and Sample Number		MW96-7A-04-1	MW96-7B-04-1	MW97-9-04-1	MW97-11-04-1	MW97-12-04-1	MW97-13-04-1
Sample Date		10/06/04	10/06/04	10/07/04	10/06/04	10/05/04	10/05/04
Parameter	Units	Result	Result	Result	Result	Result	Result
Dissolved Metals							
Aluminum	mg/L	0.03	U	0.03	U	0.03	U
Antimony	mg/L	0.0002	U	0.0002	B	0.0002	U
Arsenic	mg/L	0.0028	B	0.0436		0.0005	U
Barium	mg/L	0.01	B	0.056		0.079	
Beryllium	mg/L	0.0001	U	0.0001	U	0.0001	U
Cadmium	mg/L	0.0001	U	0.0001	U	0.0001	B
Calcium	mg/L	209		7.5		28.7	
Chromium	mg/L	0.0001	B FB	0.0002	B FB	0.0006	FB
Copper	mg/L	0.01	U	0.01	U	0.01	U
Iron	mg/L	1.89		0.03	B	0.34	
Lead	mg/L	0.0001	U	0.0001	U	0.0001	U
Magnesium	mg/L	73.0		11.8		14.7	
Manganese	mg/L	0.247		0.023	B	0.080	
Mercury	mg/L	0.0002	B FB	0.0002	U	0.0003	B FB
Molybdenum	mg/L	0.02	B	0.02	B	0.01	U
Nickel	mg/L	0.01	U	0.01	U	0.01	B
Potassium	mg/L	11.8		7.6		5.9	
Selenium	mg/L	0.001	U	0.001	U	0.001	U
Silicon	mg/L	9.5		9.3		13	
Silver	mg/L	0.00005	U	0.00005	U	0.00005	U
Sodium	mg/L	58.6		135		81.8	
Thallium	mg/L	0.0001	U	0.0001	U	0.0001	U
Vanadium	mg/L	0.005	U	0.005	U	0.005	U
Zinc	mg/L	0.01	B	0.01	U	0.01	U
Ammonia as NH3-N	mg/L	0.24	B	0.18	B	0.14	B
Nitrate as NO3-N	mg/L	0.02	U	0.03	B	0.05	B
Nitrite as NO2-N	mg/L	0.01	UH	0.01	UH	0.01	U
NO3-N + NO2-N	mg/L	0.02	UH	0.03	BH	0.05	BH
Chloride	mg/L	17		11		7	
Fluoride	mg/L	0.4	B	0.5		0.7	
Sulfate	mg/L	610		140		70	
pH	SI units	7.2	H	8.6	H	7.4	H
Conductivity	umhos/cm	1660		631		551	
Hardness as CaCO3	mg/L	823		67		132	
TSS	mg/L	12	B	204		38	H
TDS	mg/L	660		470		360	
Alkalinity as CaCO3	mg/L	352		220	H	231	
Bicarbonate, total	mg/L	352		195	H	231	
Bicarbonate, diss.	mg/L	352		195	H	231	
Carbonate	mg/L	2	U	26	H	2	U
Hydroxide	mg/L	2	U	2	UH	2	U
Gross Alpha	pCi/L	15.7+-7.8		5.24+-4.7		0.0+-3	
Gross Beta	pCi/L	14.7+-6	FB	12.2+-4.2	FB	8.24+-3.7	FB
Uranium, total	mg/L	0.01030		0.00016	B	0.00030	
Radium 226	pCi/L	2.76+-0.3		0.35+-0.2		0.57+-0.2	
Radium 228	pCi/L	2.82+-0.9	FB	0.7+-0.7	FB	1.55+-0.7	FB
Thorium 230	pCi/L	0.79+-1.7		0.41+-0.44		0.52+-0.46	
Thorium 232	pCi/L	-0.77+-1.2		0.08+-0.35		0.46+-0.42	
						0.18+-0.48	
						1.12+-0.55	
						FB	0.2+-0.4

U = not detected at value given

B = detected at a value between method detection limit (MDL) and practical quantitation limit (PQL)

H = analysis exceeded method hold time, therefore results are considered estimated

J = estimated detected value

FB = detected in field blank or field rinsate blank

In accordance with the Utah Administrative Code (UAC) R317-6-3 and Part II.A of LVMC's Ground Water Quality Discharge Permit No. UGW37005, groundwater at the existing monitoring wells is designated as Class III based on levels of gross alpha and gross beta activity which naturally exceed the groundwater standards defined in UAC R317-6-2.

Eight monitoring wells were initially specified in Part II.E.1.b of the Ground Water Quality Discharge Permit for quarterly sampling. The sampling frequency was reduced to semi-annual in 1999 and to annual in 2002. Of the eight wells initially designated for monitoring, one well (94MW4) was designated as a compliance monitoring well, while the other seven wells, (MW96-7A, MW96-7B, 94MW2, SLV1A, SLV2, SLV3, and MW2A) were designated as ambient monitoring wells.

An additional four wells installed in 1997 (MW97-9, MW97-11, MW97-12, and MW97-13) are also considered ambient monitoring wells at this time. On January 8, 1998, the State of Utah Department of Environmental Quality, Division of Water Quality, informed LVMC that groundwater in those four wells was designated Class III. Accelerated monitoring of those four wells (consisting of eight bimonthly sampling events) was completed during the fall of 1998. The data from the accelerated sampling and subsequent semi-annual and annual sampling will be used by the state to establish protection levels for each of the four wells.

Compliance Monitoring Well 94MW4 Results - Compared to Permit Compliance Levels

Groundwater protection and compliance levels were established for 94MW4 as the only designated compliance monitoring well on site (Table 1, Part II of the State of Utah Ground Water Quality Discharge Permit No. UGW370005, dated January 16, 1997). Table 4-1 presents the compliance levels established in the permit for the 94MW4 sampling location.

Monitoring well 94MW4 could not be sampled due to insufficient water volume. The depth to water in the well was 488.76 ft on October 4, 2004. The total depth of the well was measured at 499.17 ft, or 1.73 ft less than the total depth of 500.90 ft measured in November of 1998, indicating that the standing water column in the well is 10.41 feet. On October 6, 2004, 1.7 gallons of water were bailed from the well and the depth to water was measured at 491.00 ft. Thirty-nine hours later the depth to water was measured at 490.76 ft, indicating the water level had risen only 0.24 ft. The slow rate of recovery is consistent with the well history. 94MW4 was dry when drilled to 506 feet in May 1994, and as a result was not cased. The open borehole was dry when reportedly measured in October 1994, March 1995, and May 1995. The boring contained water at 410 feet below ground surface in August 1995, and was sampled without purging during the next five sampling events (1995 to 1997). The open boring was completed with PVC screen and filter pack in August 1997. The well was purged prior to sampling during the subsequent 3 sampling events (August 1997, December 1997, and February 1998). The well was not purged during the following two sampling events (May 1998 and August 1998). Water levels did not recover between sampling events, and samples could not be collected from October 1998 to October 2004 due to insufficient yield.

Ambient Monitoring Wells SLV1A, SLV2, SLV3, MW2A, and 94MW2 Results - Compared to Permit Calculated Maximum Background Levels

Table 4-2 presents the analytical results for the groundwater samples collected from the 11 ambient monitoring wells (SLV1A, SLV2, SLV3, MW2A, 94MW2, MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13) during the October 2004 sampling. Table 4-2 also shows the Utah groundwater quality standards, the preliminary background levels calculated by the State of Utah Water Quality Board (i.e., the calculated mean and standard deviations for samples collected from August 1995 through October 1996), and the preliminary maximum calculated background level (defined as the mean background concentration plus two standard deviations). Results that exceed the preliminary maximum calculated background for wells SLV1A, SLV2, SLV3, MW2A, and 94MW2 are bolded and boxed in Table 4-2. Maximum background concentrations have not been calculated by UDEQ for uranium, radium, and thorium. Results for these constituents are compared to the Utah Groundwater Quality Standards and any exceedences are bolded, boxed, and shaded in Table 4-2. In December, 2003, the EPA adopted a uranium standard of 0.03 mg/L and the State of Utah followed suite. The groundwater concentrations in this report are compared to this new standard for uranium.

The following wells exceeded the preliminary background statistics during 2004:

Well SLV3 - uranium, at a concentration of 0.0922 mg/L, exceeded the Utah groundwater quality standard of 0.03 mg/L.

Well MW2A - nickel, at a concentration of 0.02 mg/L, exceeded the maximum calculated background concentration of 0.016 mg/L. Uranium, at a concentration of 0.3830 mg/L, exceeded the Utah groundwater quality standard of 0.03 mg/L.

Ambient Monitoring Wells MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13 - Compared to Utah Groundwater Quality Standards

Comparison of the analytical results from monitoring wells MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13 was made to the general Utah groundwater quality standards because mean background concentrations have not been calculated by the State for these wells. Results from wells MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13 that exceed state groundwater quality standards are bolded, boxed, and shaded in Table 4-2.

A comparison of October 2004 results to the State of Utah groundwater quality standards for wells MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13 indicated the following wells exceeded groundwater quality standards during 2004:

Well MW96-7A - dissolved manganese, at a concentration of 0.247 mg/L, exceeded the state standard of 0.05 mg/L. Gross alpha activity of 15.7 pCi/L exceeded the calculated state standard of 15 pCi/L. Gross beta activity of 14.7 pCi/L exceeded the calculated state standard of 8 pCi/L.

Well MW96-7B - dissolved arsenic, at a concentration of 0.0436 mg/L, exceeded the federal standard of 0.01 mg/L. Gross beta activity of 12.2 pCi/L exceeded the calculated state standard of 8 pCi/L.

SECTION 4.0

2004 Sampling Results

Well MW97-9 - dissolved manganese, at a concentration of 0.080 mg/L, exceeded the state standard of 0.05 mg/L. Gross beta activity of 8.24 pCi/L exceeded the calculated state standard of 8 pCi/L.

Well MW97-11 - dissolved manganese, at a concentration of 0.421 mg/L, exceeded the state standard of 0.05 mg/L. Gross alpha activity of 15.1 pCi/L exceeded the state standard of 15 pCi/L. Gross beta activity of 15.2 pCi/L exceeded the calculated state standard of 8 pCi/L.

Well MW97-12 - dissolved manganese, at a concentration of 0.088 mg/L, exceeded the state standard of 0.05 mg/L. Gross alpha activity of 144 pCi/L exceeded the state standard of 15 pCi/L; gross beta activity of 134 pCi/L exceeded the calculated state standard of 8 pCi/L; and total uranium at a concentration of 0.0507 mg/L exceeded the state standard of 0.03 mg/L.

Well MW97-13 - dissolved arsenic, at a concentration of 0.0205 mg/L, exceeded the federal standard of 0.01 mg/L. Manganese at a concentration of 0.166 mg/L exceeded the state standard of 0.05 mg/L. Gross beta activity of 15.6 pCi/L exceeded the calculated state standard of 8 pCi/L.

TABLE 4-1
GROUNDWATER ANALYTICAL RESULTS TO COMPLIANCE
MONITORING WELL 94MW4 PERMIT COMPLIANCE LEVELS
Lisbon Valley Copper Project
October 2004

Compliance Monitoring Well 94MW4

Monitoring Well and Sample Number	Sample Date	94MW4-n/s ⁽⁵⁾	94MW4-n/s ⁽⁵⁾	Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		Compliance Level ⁽²⁾
		Oct-03	Oct-04		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	
Parameter	Units	Result	Result				
Dissolved Metals							
Aluminum	mg/L	n/s	n/s	----	----	----	----
Antimony	mg/L	n/s	n/s	0.006	0.007	0.004	0.015
Arsenic	mg/L	n/s	n/s	0.005	0.011	0.002	0.025
Barium	mg/L	n/s	n/s	2.0	0.27	0.577	1.42
Beryllium	mg/L	n/s	n/s	0.004	0.001 U	n/a	0.002
Cadmium	mg/L	n/s	n/s	0.005	0.001 U	n/a	0.003
Calcium	mg/L	n/s	n/s	----	----	----	----
Chromium	mg/L	n/s	n/s	0.1	0.005 U	n/a	0.05
Copper	mg/L	n/s	n/s	1.3	0.011	0.015	0.65
Iron	mg/L	n/s	n/s	----	----	----	----
Lead	mg/L	n/s	n/s	0.015	0.005 U	n/a	0.008
Magnesium	mg/L	n/s	n/s	----	----	----	----
Manganese	mg/L	n/s	n/s	0.05	0.004	0.001	0.025
Mercury	mg/L	n/s	n/s	0.002	0.0002 U	n/a	0.001
Molybdenum	mg/L	n/s	n/s	----	----	----	----
Nickel	mg/L	n/s	n/s	0.1	0.004	0.001	0.05
Potassium	mg/L	n/s	n/s	----	----	----	----
Selenium	mg/L	n/s	n/s	0.05	0.002	0.001	0.025
Silicon	mg/L	n/s	n/s	----	----	----	----
Silver	mg/L	n/s	n/s	0.1	0.002 U	n/a	0.05
Sodium	mg/L	n/s	n/s	----	----	----	----
Thallium	mg/L	n/s	n/s	0.002	0.001 U	n/a	0.001
Vanadium	mg/L	n/s	n/s	n/a	0.009	0.006	n/a
Zinc	mg/L	n/s	n/s	5.0	0.083	0.036	2.5
Wet Chemistry							
Ammonia as NH ₃ -N	mg/L	n/s	n/s	----	----	----	----
Nitrate as NO ₃ -N	mg/L	n/s	n/s	10.0	0.69	0.52	5.0
Nitrite as NO ₂ -N	mg/L	n/s	n/s	1.0	1.59 J	0.59	2.77
NO ₃ -N + NO ₂ -N	mg/L	n/s	n/s	10.0	2.28	1.11	7.77
Chloride	mg/L	n/s	n/s	----	----	----	----
Fluoride	mg/L	n/s	n/s	4.0	2.64	0.90	4.44
Sulfate	mg/L	n/s	n/s	----	----	----	----
pH	SI units	n/s	n/s	6.5 - 8.5	8.42 J	0.55	6.50 - 9.52
Conductivity	umhos/cm	n/s	n/s	----	----	----	----
Hardness as CaCO ₃	mg/L	n/s	n/s	----	----	----	----
TSS	mg/L	n/s	n/s	----	----	----	----
TDS	mg/L	n/s	n/s	10000	732	151	1032
Alkalinity as CaCO ₃	mg/L	n/s	n/s	----	----	----	----
Bicarbonate, total	mg/L	n/s	n/s	----	----	----	----
Bicarbonate, diss.	mg/L	n/s	n/s	----	----	----	----
Carbonate	mg/L	n/s	n/s	----	----	----	----
Hydroxide	mg/L	n/s	n/s	----	----	----	----
Radiological							
Gross Alpha	pCi/L	n/s	n/s	15 pCi/L	61	46	153
Gross Beta	pCi/L	n/s	n/s	8 pCi/L ⁽³⁾	60	15	90
Uranium, total	mg/L	n/s	n/s	0.03	ID	ID	0.02
Radium ²²⁶	pCi/L	n/s	n/s	20 pCi/L ⁽⁴⁾	ID	ID	20 pCi/L ⁽⁴⁾
Radium ²²⁸	pCi/L	n/s	n/s	20 pCi/L ⁽⁴⁾	ID	ID	20 pCi/L ⁽⁴⁾
Thorium ²³⁰	pCi/L	n/s	n/s	n/a	ID	ID	n/a
Thorium ²³²	pCi/L	n/s	n/s	n/a	ID	ID	n/a

TABLE 4-1

**GROUNDWATER ANALYTICAL RESULTS TO COMPLIANCE
MONITORING WELL 94MW4 PERMIT COMPLIANCE LEVELS**

**Lisbon Valley Copper Project
October 2004**

n/a = not applicable
ID = insufficient data
mg/L = milligrams per liter
umhos/cm = micromhos per centimeter
SI = standard international units
pCi/L = picocuries per liter
x = mean value
std = standard deviation
n/s = not sampled

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**Bolded and boxed results indicate that the parameter exceeds State of Utah compliance level
(as defined in Table I, Part II of the State of Utah Ground Water Quality Discharge Permit
No. UGW370005, dated 16 January 1997) for open borehole 94MW4.**

- ⁽¹⁾ If no value is given, a groundwater standard has not been established for that parameter.
- ⁽²⁾ The mean background concentration, standard deviation numbers, and compliance levels were calculated by the State of Utah Water Quality Board (and are shown in Table I, Part II of the State of Utah Ground Water Quality Discharge Permit No. UGW370005, dated 16 January 1997) for compliance monitoring wells.
- ⁽³⁾ The standard is that activity which will cause a 4 mrem/year. exposure; converted to pCi/L assuming that the beta activity is due to Sr-90 and a 2-liter per day intake of water.
- ⁽⁴⁾ The standard is combined radium ²²⁶ and radium ²²⁸ of 20.0 pCi/L.
- ⁽⁵⁾ Groundwater samples were not collected from October 1998 to October 2004 due to insufficient water volume in the well.

TABLE 4-2

**GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS**
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well SLV1A								
Monitoring Well and Sample Number			SLV1A-		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			03-1	04-1		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Sample Date			10/08/03	10/05/04				
Parameter	Units	Analytical Method	Result	Result				
Dissolved Metals								
Aluminum	mg/L	EPA 200.7	0.06	U	0.06	U	-----	-----
Antimony	mg/L	EPA 204.2	0.002	B	0.0006	B	0.006	0.003 U
Arsenic	mg/L	EPA 206.2	0.0011	B	0.001	U	0.01	0.005 U
Barium	mg/L	EPA 200.7	0.010	FB	0.009	B	2.0	0.009
Beryllium	mg/L	EPA 200.8	0.0005	U	0.0002	U	0.004	0.001 U
Cadmium	mg/L	EPA 200.8	0.0136		0.0153		0.005	0.015
Calcium	mg/L	EPA 200.7	489		460		-----	-----
Chromium	mg/L	EPA 200.8	0.0005	U	0.0008	FB	0.1	0.009
Copper	mg/L	EPA 200.7	0.02	U	0.02	U	1.3	0.01 U
Iron	mg/L	EPA 200.7	0.68		0.98		-----	-----
Lead	mg/L	EPA 239.2	0.0005	U	0.0003	B	0.015	0.006
Magnesium	mg/L	EPA 200.7	212		205		-----	-----
Manganese	mg/L	EPA 200.7	1.58		1.61		0.05	1.56
Mercury	mg/L	EPA 245.1	0.0002	U	0.0005	FB	0.002	0.0002 U
Molybdenum	mg/L	EPA 200.7	0.02	U	0.02	U	-----	-----
Nickel	mg/L	EPA 200.7	0.04	B	0.03	B	0.1	0.035
Potassium	mg/L	EPA 200.7	20.4		19.6		-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	0.011
Silicon	mg/L	EPA 200.7	10.3		10.1		-----	-----
Silver	mg/L	EPA 200.8	0.0003	U	0.0001	U	0.1	0.002 U
Sodium	mg/L	EPA 200.7	137		141		-----	-----
Thallium	mg/L	EPA 200.8	0.0004	B	0.0003	B	0.002	0.001 U
Vanadium	mg/L	EPA 200.7	0.01	U	0.01	U	n/a	0.01 U
Zinc	mg/L	EPA 200.7	0.55		0.4		5.0	0.671
Wet Chemistry								
Ammonia as NH ₃ -N	mg/L	EPA 350.1	0.37		0.31	B	-----	-----
Nitrate as NO ₃ -N	mg/L	Calculation	0.40		0.04	B	10.0	0.02 U
Nitrite as NO ₂ -N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	0.005 U
NO ₃ -N + NO ₂ -N	mg/L	EPA 353.2	.40	H	0.04	BH	10.0	0.025 U
Chloride	mg/L	EPA 325.2	98		108		-----	-----
Fluoride	mg/L	EPA 340.2	0.6		0.5		4.0	0.584
Sulfate	mg/L	EPA 375.3	1830		1830		-----	-----
pH	SI units	EPA 150.1	7.8	H	7.1	H	6.5 - 8.5	7.07
Conductivity	umhos/cm	EPA 120.1	3150		3630		-----	-----
Hardness as CaCO ₃	mg/L	SM 2340B	2090		1990		-----	-----
TSS	mg/L	EPA 160.2	388	J	336	H	-----	-----
TDS	mg/L	EPA 160.1	3300		3300	H	10000	3030
Alkalinity as CaCO ₃ , t	mg/L	SM 2320B	461		455		-----	-----
Bicarbonate, total	mg/L	SM 2320B	461		455		-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	461		455		-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	U	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	U	-----	-----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	25.3+-15		111+-32		15 pCi/L	132
Gross Beta	pCi/L	EPA 900.0	24.8+-15		54.7+-18		8 pCi/L ⁽⁴⁾	176
Uranium, total	mg/L	EPA 200.8	0.0276 ⁽⁶⁾		0.0200		0.03	NC
Radium ²²⁶	pCi/L	EPA 903.1	9.25+-0.7		9.2+-0.7		20 pCi/L ⁽⁵⁾	NC
Radium ²²⁸	pCi/L	EPA 904.0	7.78+-1	FB	7.56+-1.1		20 pCi/L ⁽⁵⁾	NC
Thorium ²³⁰	pCi/L	ESM 4506	0.27+-0.35		0.16+-0.38		n/a	NC
Thorium ²³²	pCi/L	ESM 4506	0.22+-0.31		0.05+-0.33		n/a	NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well SLV2

Monitoring Well and Sample Number			SLV2-03-1	SLV2-04-1	Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			Sample Date	Result		Result	Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾
Dissolved Metals		Analytical Method						
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	-----	-----
Antimony	mg/L	EPA 204.2	0.0003	B	0.0005	B	0.006	0.003 U n/a n/a
Arsenic	mg/L	EPA 206.2	0.0030		0.0021	B	0.01	0.005 U n/a n/a
Barium	mg/L	EPA 200.7	0.047		0.046		2.0	0.054 0.007 0.068
Beryllium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.004	0.001 U n/a n/a
Cadmium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.005	0.001 U n/a n/a
Calcium	mg/L	EPA 200.7	61.1		56.3		-----	-----
Chromium	mg/L	EPA 200.8	0.0001	U	0.0001	B FB	0.1	0.005 U n/a n/a
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	0.01 U n/a n/a
Iron	mg/L	EPA 200.7	0.02	B	0.01	U	-----	-----
Lead	mg/L	EPA 239.2	0.0001	U	0.0001	U	0.015	0.005 U n/a n/a
Magnesium	mg/L	EPA 200.7	25.4		23.6		-----	-----
Manganese	mg/L	EPA 200.7	0.005	B	0.005	U	0.05	0.111 0.125 0.361
Mercury	mg/L	EPA 245.1	0.0002	U	0.0003	B FB	0.002	0.0002 U n/a n/a
Molybdenum	mg/L	EPA 200.7	0.01	U	0.01	U	-----	-----
Nickel	mg/L	EPA 200.7	0.01	B	0.01	U	0.1	0.01 U n/a n/a
Potassium	mg/L	EPA 200.7	2.6		2.4		-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	0.003 0.003 0.009
Silicon	mg/L	EPA 200.7	17.5		17.4		-----	-----
Silver	mg/L	EPA 200.8	0.0001	U	0.0003	U	0.1	0.002 U n/a n/a
Sodium	mg/L	EPA 200.7	41		41.0		-----	-----
Thallium	mg/L	EPA 200.8	0.00005	B	0.0001	U	0.002	0.001 U n/a n/a
Vanadium	mg/L	EPA 200.7	0.006	B	0.005	U	n/a	0.01 U n/a n/a
Zinc	mg/L	EPA 200.7	0.03	B FB	0.01	B	5.0	0.228 0.244 0.716
Wet Chemistry								
Ammonia as NH3-N	mg/L	EPA 350.1	0.05	U	0.05	U	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.02	U	10.0	0.094 0.062 0.218
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	0.008 0.004 0.016
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.02	UH	10.0	0.102 0.066 0.234
Chloride	mg/L	EPA 325.2	12		12		-----	-----
Fluoride	mg/L	EPA 340.2	0.4	B	0.4	B	4.0	0.465 0.162 0.789
Sulfate	mg/L	EPA 375.3	150		140		-----	-----
pH	SI units	EPA 150.1	8.2	H	7.7	H	6.5 - 8.5	7.75 0.11 6.50 - 7.97
Conductivity	umhos/cm	EPA 120.1	654		614		-----	-----
Hardness as CaCO3	mg/L	SM 2340B	257		238		-----	-----
TSS	mg/L	EPA 160.2	640	J	900		-----	-----
TDS	mg/L	EPA 160.1	400		410		10000	585 318 1221
Alkalinity as CaCO3, t	mg/L	SM 2320B	168		181		-----	-----
Bicarbonate, total	mg/L	SM 2320B	168		181		-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	168		181		-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	U	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	U	-----	-----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	24.5+-6.7		19+-6		15 pCi/L	77 60 197
Gross Beta	pCi/L	EPA 900.0	17.6+-4.6		13.9+-4	FB	8 pCi/L ⁽⁴⁾	100 87 274
Uranium, total	mg/L	EPA 200.8	0.01380		0.01360		0.03	NC NC NC
Radium 226	pCi/L	EPA 903.1	1.02+-0.2		0.74+-0.2		20 pCi/L ⁽⁵⁾	NC NC NC
Radium 228	pCi/L	EPA 904.0	0.93+-0.7	FB	1.11+-0.7	FB	20 pCi/L ⁽⁵⁾	NC NC NC
Thorium 230	pCi/L	ESM 4506	0.14+-0.36		-0.93+-0.54		n/a	NC NC ---
Thorium 232	pCi/L	ESM 4506	0.52+-0.38		-0.25+-0.58		n/a	NC NC ---

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well SLV3

Monitoring Well and Sample Number	Analytical Method	SLV3-03-1		SLV3-04-1		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
		Sample Date	Result	Result	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Dissolved Metals	Units								
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	-----	-----	-----
Antimony	mg/L	EPA 204.2	0.0004	U	0.0004	U	0.006	0.003 U	n/a
Arsenic	mg/L	EPA 206.2	0.0007	B	0.001	U	0.01	0.005 U	n/a
Barium	mg/L	EPA 200.7	0.011	FB	0.009	B	2.0	0.017	0.012
Beryllium	mg/L	EPA 200.8	0.0002	U	0.0002	U	0.004	0.001 U	n/a
Cadmium	mg/L	EPA 200.8	0.0002	U	0.0006	B	0.005	0.001 U	n/a
Calcium	mg/L	EPA 200.7	307		303		-----	-----	-----
Chromium	mg/L	EPA 200.8	0.0002	U	0.0007	B FB	0.1	0.005 U	n/a
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	0.01 U	n/a
Iron	mg/L	EPA 200.7	11.00		1.86		-----	-----	-----
Lead	mg/L	EPA 239.2	0.0002	U	0.0005	B	0.015	0.005 U	n/a
Magnesium	mg/L	EPA 200.7	102		95.4		-----	-----	-----
Manganese	mg/L	EPA 200.7	0.750		0.545		0.05	0.707	0.099
Mercury	mg/L	EPA 245.1	0.0002	U	0.0003	B FB	0.002	0.0002 U	n/a
Molybdenum	mg/L	EPA 200.7	0.01	U	0.01	U	-----	-----	-----
Nickel	mg/L	EPA 200.7	0.02	B	0.01	B	0.1	0.017	0.008
Potassium	mg/L	EPA 200.7	14		14.1		-----	-----	-----
Selenium	mg/L	SM 3500	0.001	B	0.001	U	0.05	0.009	0.012
Silicon	mg/L	EPA 200.7	8.5		8.8		-----	-----	-----
Silver	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.1	0.002 U	n/a
Sodium	mg/L	EPA 200.7	59.4		64.1		-----	-----	-----
Thallium	mg/L	EPA 200.8	0.0002	B	0.0008	B	0.002	0.001 U	n/a
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	0.01 U	n/a
Zinc	mg/L	EPA 200.7	0.20		0.48		5.0	0.149	0.177
Wet Chemistry									
Ammonia as NH3-N	mg/L	EPA 350.1	0.20	B	0.25	B	-----	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.02	U	10.0	0.225	0.532
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	0.006	0.002
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.02	UH	10.0	0.231	0.534
Chloride	mg/L	EPA 325.2	21		19		-----	-----	-----
Fluoride	mg/L	EPA 340.2	0.4	B	0.4	B	4.0	0.345	0.111
Sulfate	mg/L	EPA 375.3	850		910		-----	-----	-----
pH	SI units	EPA 150.1	7.9	H	7.3	H	6.5 - 8.5	7.15	0.26
Conductivity	umhos/cm	EPA 120.1	1920		2080		-----	-----	6.50 - 7.67
Hardness as CaCO3	mg/L	SM 2340B	1190		1150		-----	-----	-----
TSS	mg/L	EPA 160.2	146		12	BH	-----	-----	-----
TDS	mg/L	EPA 160.1	1650		1740	H	10000	1993	162
Alkalinity as CaCO3, t	mg/L	SM 2320B	375		399		-----	-----	-----
Bicarbonate, total	mg/L	SM 2320B	375		399		-----	-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	375		399		-----	-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	U	-----	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	U	-----	-----	-----
Radiological									
Gross Alpha	pCi/L	EPA 900.0	43.4+-14		62.3+-14		15 pCi/L	98	23
Gross Beta	pCi/L	EPA 900.0	35.9+-8.3		40.7+-8.4		8 pCi/L ⁽⁴⁾	90	36
Uranium, total	mg/L	EPA 200.8	0.0899		0.0922		0.03	NC	NC
Radium 226	pCi/L	EPA 903.1	5.3+-0.5		7.69+-0.6		20 pCi/L ⁽⁵⁾	NC	NC
Radium 228	pCi/L	EPA 904.0	4.55+-0.8	FB	1.91+-0.7	FB	20 pCi/L ⁽⁵⁾	NC	NC
Thorium 230	pCi/L	ESM 4506	0.03+-0.36		1.84+-0.49	FB J	n/a	NC	NC
Thorium 232	pCi/L	ESM 4506	0.05+-0.33		0.13+-0.3		n/a	NC	NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW2A

Monitoring Well and Sample Number			MW2A-	MW2A-	Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			03-1	04-1		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Sample Date			10/07/03	10/05/04				
Parameter	Units	Analytical Method	Result	Result				
Dissolved Metals								
Aluminum	mg/L	EPA 200.7	0.06	U	0.06	U	-----	-----
Antimony	mg/L	EPA 204.2	0.0004	U	0.0004	U	0.006	0.003 U
Arsenic	mg/L	EPA 206.2	0.0004	B	0.001	U	0.01	0.005 U
Barium	mg/L	EPA 200.7	0.011	B FB	0.010	B	2.0	0.017
Beryllium	mg/L	EPA 200.8	0.0002	U	0.0002	U	0.004	0.001 U
Cadmium	mg/L	EPA 200.8	0.0002	B	0.0002	U	0.005	0.001 U
Calcium	mg/L	EPA 200.7	435		423		-----	-----
Chromium	mg/L	EPA 200.8	0.0002	U	0.0007	B FB	0.1	0.005 U
Copper	mg/L	EPA 200.7	0.17		0.21		1.3	0.203
Iron	mg/L	EPA 200.7	0.41		0.51		-----	-----
Lead	mg/L	EPA 239.2	0.0002	U	0.0003	B	0.015	0.005 U
Magnesium	mg/L	EPA 200.7	127		126		-----	-----
Manganese	mg/L	EPA 200.7	1.00		1.03		0.05	1.09
Mercury	mg/L	EPA 245.1	0.0002	U	0.0002	U	0.002	0.0002 U
Molybdenum	mg/L	EPA 200.7	0.02	U	0.02	U	-----	-----
Nickel	mg/L	EPA 200.7	0.02	B	0.02	U	0.1	0.010
Potassium	mg/L	EPA 200.7	16.3		14.9		-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	0.007
Silicon	mg/L	EPA 200.7	8.8		9.2		-----	-----
Silver	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.1	0.002 U
Sodium	mg/L	EPA 200.7	67.5		72.1		-----	-----
Thallium	mg/L	EPA 200.8	0.0002	B	0.0004	B	0.002	0.001 U
Vanadium	mg/L	EPA 200.7	0.01	U	0.01	U	n/a	0.01 U
Zinc	mg/L	EPA 200.7	0.08	B FB	0.04	B	5.0	0.862
Wet Chemistry								
Ammonia as NH3-N	mg/L	EPA 350.1	0.17	B	0.19	B	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.02	U	10.0	0.091
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	0.007
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.02	UH	10.0	0.098
Chloride	mg/L	EPA 325.2	15		15		-----	-----
Fluoride	mg/L	EPA 340.2	0.3	B	0.3	B	4.0	0.356
Sulfate	mg/L	EPA 375.3	1230		1240		-----	-----
pH	SI units	EPA 150.1	7.8	H	7.4	H	6.5 - 8.5	7.10
Conductivity	umhos/cm	EPA 120.1	2440		2390		-----	-----
Hardness as CaCO3	mg/L	SM 2340B	1610		1580		-----	-----
TSS	mg/L	EPA 160.2	80		52	H	-----	-----
TDS	mg/L	EPA 160.1	2330		2320	H	10000	2346
Alkalinity as CaCO3, t	mg/L	SM 2320B	539		551		-----	-----
Bicarbonate, total	mg/L	SM 2320B	539		551		-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	539		551		-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	UH	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	UH	-----	-----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	191+/-28		280+/-39		15 pCi/L	239
Gross Beta	pCi/L	EPA 900.0	83.8+/-16		126+/-15		8 pCi/L ⁽⁴⁾	114
Uranium, total	mg/L	EPA 200.8	0.3870		0.3830		0.03	NC
Radium 226	pCi/L	EPA 903.1	1.55+/-0.3		1.55+/-0.3		20 pCi/L ⁽⁵⁾	NC
Radium 228	pCi/L	EPA 904.0	0.54+/-0.7	FB	0.98+/-0.8	FB	20 pCi/L ⁽⁵⁾	NC
Thorium 230	pCi/L	ESM 4506	-0.02+/-0.38		0.87+/-0.5	FB J	n/a	NC
Thorium 232	pCi/L	ESM 4506	-0.08+/-0.33		0.11+/-0.36		n/a	NC

TABLE 4-2

**GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS**

Lisbon Valley Copper Project

October 2004

Ambient Monitoring Well 94MW2

Monitoring Well and Sample Number	Sample Date	Analytical Method	94MW2-03-1	94MW2-04-1	Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			Result	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Dissolved Metals								
Aluminum	mg/L	EPA 200.7	0.03 U	0.03 U	----	----	----	----
Antimony	mg/L	EPA 204.2	0.00018	0.0008 B	0.006	0.003	0.002	0.007
Arsenic	mg/L	EPA 206.2	0.0027	0.0031	0.01	0.005 U	n/a	n/a
Barium	mg/L	EPA 200.7	0.015 FB	0.015	2.0	0.021	0.007	0.035
Beryllium	mg/L	EPA 200.8	0.0001 U	0.0001 U	0.004	0.001 U	n/a	n/a
Cadmium	mg/L	EPA 200.8	0.0086	0.0104	0.005	0.009	0.005	0.019
Calcium	mg/L	EPA 200.7	102	95.3	----	----	----	----
Chromium	mg/L	EPA 200.8	0.0002 B FB	0.0001 B FB	0.1	0.005 U	n/a	n/a
Copper	mg/L	EPA 200.7	0.01 U	0.01 U	1.3	0.01 U	n/a	n/a
Iron	mg/L	EPA 200.7	0.25	0.19	----	----	----	----
Lead	mg/L	EPA 239.2	0.0001 U	0.0001 U	0.015	0.016	0.024	0.064
Magnesium	mg/L	EPA 200.7	36	34.4	----	----	----	----
Manganese	mg/L	EPA 200.7	0.173	0.181	0.05	0.38	0.51	1.40
Mercury	mg/L	EPA 245.1	0.0002 U	0.0003 B FB	0.002	0.0002 U	n/a	n/a
Molybdenum	mg/L	EPA 200.7	0.02 B	0.01 U	----	----	----	----
Nickel	mg/L	EPA 200.7	0.02 B	0.01 U	0.1	0.037	0.031	0.099
Potassium	mg/L	EPA 200.7	9.4	8.9	----	----	----	----
Selenium	mg/L	SM 3500	0.001 U	0.001 U	0.05	0.009	0.009	0.027
Silicon	mg/L	EPA 200.7	12.7	12.7	----	----	----	----
Silver	mg/L	EPA 200.8	0.00005 U	0.00005 U	0.1	0.004	0.003	0.010
Sodium	mg/L	EPA 200.7	76.8	76.4	----	----	----	----
Thallium	mg/L	EPA 200.8	0.00041	0.0004 B	0.002	0.001 U	n/a	n/a
Vanadium	mg/L	EPA 200.7	0.005 U	0.005 U	n/a	0.01 U	n/a	n/a
Zinc	mg/L	EPA 200.7	0.07 FB	0.03 B	5.0	0.725	0.464	1.653
Wet Chemistry								
Ammonia as NH3-N	mg/L	EPA 350.1	0.05 U	0.05 U	----	----	----	----
Nitrate as NO3-N	mg/L	Calculation	0.41	0.02 U	10.0	0.036	0.031	0.098
Nitrite as NO2-N	mg/L	EPA 353.2	0.01 UH	0.01 UH	1.0	0.007	0.004	0.015
NO3-N + NO2-N	mg/L	EPA 353.2	0.41 UH	0.02 UH	10.0	0.043	0.035	0.113
Chloride	mg/L	EPA 325.2	27	26	----	----	----	----
Fluoride	mg/L	EPA 340.2	0.4 B	0.4 B	4.0	0.393	0.143	0.679
Sulfate	mg/L	EPA 375.3	350	360	----	----	----	----
pH	SI units	EPA 150.1	7.6 H	6.7 H	6.5 - 8.5	7.01	0.40	6.50 - 7.81
Conductivity	umhos/cm	EPA 120.1	1040	1030	----	----	----	----
Hardness as CaCO3	mg/L	SM 2340B	403	380	----	----	----	----
TSS	mg/L	EPA 160.2	1470	1840 H	----	----	----	----
TDS	mg/L	EPA 160.1	710	700 H	10000	904	138	1180
Alkalinity as CaCO3, t	mg/L	SM 2320B	163	174	----	----	----	----
Bicarbonate, total	mg/L	SM 2320B	163	174	----	----	----	----
Bicarbonate, diss.	mg/L	SM 2320B	163	174	----	----	----	----
Carbonate	mg/L	SM 2320B	2 U	2 U	----	----	----	----
Hydroxide	mg/L	SM 2320B	2 U	2 U	----	----	----	----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	51.6+-12	70.5+-16	15 pCi/L	270	218	706
Gross Beta	pCi/L	EPA 900.0	38.3+-8.2	33.5+-8.3	8 pCi/L ⁽⁴⁾	273	1765	3803
Uranium, total	mg/L	EPA 200.8	0.0601	0.02870	0.03	NC	NC	NC
Radium 226	pCi/L	EPA 903.1	5.4+-0.5	4.85+-0.5	20 pCi/L ⁽⁵⁾	NC	NC	NC
Radium 228	pCi/L	EPA 904.0	3.2+-1.4 FB	2.04+-0.8 FB	20 pCi/L ⁽⁵⁾	NC	NC	NC
Thorium 230	pCi/L	ESM 4506	3.54+-0.73	0.4+-0.98	n/a	NC	NC	----
Thorium 232	pCi/L	ESM 4506	0.97+-0.46	0.71+-0.94	n/a	NC	NC	----

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW96-7A										
Monitoring Well and Sample Number			MW96-7A-03-1		MW96-7A-04-1		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			Sample Date	Result	Result	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Parameter	Units	Analytical Method								
Dissolved Metals										
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	----	----	----	
Antimony	mg/L	EPA 204.2	0.0002	U	0.0002	U	0.006	NC	NC	
Arsenic	mg/L	EPA 206.2	0.0036		0.0028	B	0.01	NC	NC	
Barium	mg/L	EPA 200.7	0.009	B FB	0.01	B	2.0	NC	NC	
Beryllium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.004	NC	NC	
Cadmium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.005	NC	NC	
Calcium	mg/L	EPA 200.7	227		209		----	----	----	
Chromium	mg/L	EPA 200.8	0.0001	B FB	0.0001	B FB	0.1	NC	NC	
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC	NC	
Iron	mg/L	EPA 200.7	2.05		1.89		----	----	----	
Lead	mg/L	EPA 239.2	0.0001	U	0.0001	U	0.015	NC	NC	
Magnesium	mg/L	EPA 200.7	77.6		73.0		----	----	----	
Manganese	mg/L	EPA 200.7	0.259		0.247		0.05	NC	NC	
Mercury	mg/L	EPA 245.1	0.0006	B	0.0002	B FB	0.002	NC	NC	
Molybdenum	mg/L	EPA 200.7	0.03	B	0.02	B	----	----	----	
Nickel	mg/L	EPA 200.7	0.01	U	0.01	U	0.1	NC	NC	
Potassium	mg/L	EPA 200.7	12.0		11.8		----	----	----	
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC	NC	
Silicon	mg/L	EPA 200.7	9.6		9.5		----	----	----	
Silver	mg/L	EPA 200.8	0.00005	U	0.00005	U	0.1	NC	NC	
Sodium	mg/L	EPA 200.7	54.8		58.6		----	----	----	
Thallium	mg/L	EPA 200.8	0.00006	B	0.0001	U	0.002	NC	NC	
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC	NC	
Zinc	mg/L	EPA 200.7	0.03	B FB	0.01	B	5.0	NC	NC	
Wet Chemistry										
Ammonia as NH3-N	mg/L	EPA 350.1	0.20	B	0.24	B	----	----	----	
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.02	U	10.0	NC	NC	
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	NC	NC	
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.02	UH	10.0	NC	NC	
Chloride	mg/L	EPA 325.2	19		17		----	----	----	
Fluoride	mg/L	EPA 340.2	0.4		0.4	B	4.0	NC	NC	
Sulfate	mg/L	EPA 375.3	610		610		----	----	----	
pH	SI units	EPA 150.1	7.9	H	7.2	H	6.5 - 8.5	NC	NC	
Conductivity	umhos/cm	EPA 120.1	1580		1660		----	----	----	
Hardness as CaCO3	mg/L	SM 2340B	886		823		----	----	----	
TSS	mg/L	EPA 160.2	10	BJ	12	B	----	----	----	
TDS	mg/L	EPA 160.1	1210		660		10000	NC	NC	
Alkalinity as CaCO3, t	mg/L	SM 2320B	350		352		----	----	----	
Bicarbonate, total	mg/L	SM 2320B	350		352		----	----	----	
Bicarbonate, diss.	mg/L	SM 2320B	350		352		----	----	----	
Carbonate	mg/L	SM 2320B	2	U	2	U	----	----	----	
Hydroxide	mg/L	SM 2320B	2	U	2	U	----	----	----	
Radiological										
Gross Alpha	pCi/L	EPA 900.0	14+/-7.4		15.7+/-7.8		15 pCi/L	NC	NC	
Gross Beta	pCi/L	EPA 900.0	12.9+/-5.5		14.7+/-6	FB	8 pCi/L ⁽⁴⁾	NC	NC	
Uranium, total	mg/L	EPA 200.8	0.0101		0.01030		0.03	NC	NC	
Radium 226	pCi/L	EPA 903.1	2.84+/-0.4		2.76+/-0.3		20 pCi/L ⁽⁵⁾	NC	NC	
Radium 228	pCi/L	EPA 904.0	1.92+/-0.7	FB	2.82+/-0.9	FB	20 pCi/L ⁽⁵⁾	NC	NC	
Thorium 230	pCi/L	ESM 4506	0.05+/-0.36		0.79+/-1.7		n/a	NC	NC	
Thorium 232	pCi/L	ESM 4506	0.05+/-0.32		-0.77+/-1.2		n/a	NC	NC	

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW96-7B

Monitoring Well and Sample Number			MW96-7B-	MW96-7B-	Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			03-1	04-1		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Parameter	Units	Analytical Method	Result	Result				
Dissolved Metals								
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	----	----
Antimony	mg/L	EPA 204.2	0.0004	U	0.0002	B	0.006	NC NC NC
Arsenic	mg/L	EPA 206.2	0.1840		0.0436		0.01	NC NC NC
Barium	mg/L	EPA 200.7	0.070		0.056		2.0	NC NC NC
Beryllium	mg/L	EPA 200.8	0.0002	U	0.0001	U	0.004	NC NC NC
Cadmium	mg/L	EPA 200.8	0.0002	B	0.0001	U	0.005	NC NC NC
Calcium	mg/L	EPA 200.7	8.8		7.5		----	----
Chromium	mg/L	EPA 200.8	0.0001	B FB	0.0002	B FB	0.1	NC NC NC
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC NC NC
Iron	mg/L	EPA 200.7	0.02	B	0.03	B	----	----
Lead	mg/L	EPA 239.2	0.0001	U	0.0001	U	0.015	NC NC NC
Magnesium	mg/L	EPA 200.7	13.2		11.8		----	----
Manganese	mg/L	EPA 200.7	0.007	B	0.023	B	0.05	NC NC NC
Mercury	mg/L	EPA 245.1	0.0002	U	0.0002	U	0.002	NC NC NC
Molybdenum	mg/L	EPA 200.7	0.08		0.02	B	----	----
Nickel	mg/L	EPA 200.7	0.01	U	0.01	U	0.1	NC NC NC
Potassium	mg/L	EPA 200.7	7.5		7.6		----	----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC NC NC
Silicon	mg/L	EPA 200.7	9.9		9.3		----	----
Silver	mg/L	EPA 200.8	0.00005		0.00005	U	0.1	NC NC NC
Sodium	mg/L	EPA 200.7	145		135		----	----
Thallium	mg/L	EPA 200.8	0.00005	U	0.0001	U	0.002	NC NC NC
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC NC NC
Zinc	mg/L	EPA 200.7	0.02	B FB	0.01	U	5.0	NC NC NC
Wet Chemistry								
Ammonia as NH3-N	mg/L	EPA 350.1	0.16	B	0.18	B	----	----
Nitrate as NO3-N	mg/L	Calculation	0.03	B FB	0.03	B	10.0	NC NC NC
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	NC NC NC
NO3-N + NO2-N	mg/L	EPA 353.2	0.03	B FB H	0.03	BH	10.0	NC NC NC
Chloride	mg/L	EPA 325.2	12		11		----	----
Fluoride	mg/L	EPA 340.2	0.6		0.5		4.0	NC NC NC
Sulfate	mg/L	EPA 375.3	150		140		----	----
pH	SI units	EPA 150.1	8.6	H	8.6	H	6.5 - 8.5	NC NC NC
Conductivity	umhos/cm	EPA 120.1	817		631		----	----
Hardness as CaCO3	mg/L	SM 2340B	76		67		----	----
TSS	mg/L	EPA 160.2	78	J	204		----	----
TDS	mg/L	EPA 160.1	470		470		10000	NC NC NC
Alkalinity as CaCO3, t	mg/L	SM 2320B	233		220	H	----	----
Bicarbonate, total	mg/L	SM 2320B	215		195	H	----	----
Bicarbonate, diss.	mg/L	SM 2320B	215		195	H	----	----
Carbonate	mg/L	SM 2320B	18		26	H	----	----
Hydroxide	mg/L	SM 2320B	2	U	2	UH	----	----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	5.03+/-3.7		5.24+/-4.7		15 pCi/L	NC NC NC
Gross Beta	pCi/L	EPA 900.0	8.32+/-3.6		12.2+/-4.2	FB	8 pCi/L ⁽⁴⁾	NC NC NC
Uranium, total	mg/L	EPA 200.8	0.00028	B FB	0.00016	B	0.03	NC NC NC
Radium 226	pCi/L	EPA 903.1	0.88+/-0.3		0.35+/-0.2		20 pCi/L ⁽⁵⁾	NC NC NC
Radium 228	pCi/L	EPA 904.0	1.63+/-0.8	FB	0.7+/-0.7	FB	20 pCi/L ⁽⁵⁾	NC NC NC
Thorium 230	pCi/L	ESM 4506	-0.24+/-0.3		0.41+/-0.44		n/a	NC NC NC
Thorium 232	pCi/L	ESM 4506	-0.07+/-0.29		0.08+/-0.35		n/a	NC NC NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW97-9								
Monitoring Well and Sample Number			MW97-9-		MW97-9-		Background Levels	
			03-1	04-1	Result	Result		
Sample Date			10/7/2003	10/7/2004				
Parameter	Units	Analytical Method	Result		Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾
Dissolved Metals								
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	-----	-----
Antimony	mg/L	EPA 204.2	0.0004	B	0.0002	U	0.006	NC NC NC
Arsenic	mg/L	EPA 206.2	0.0008		0.0005	U	0.01	NC NC NC
Barium	mg/L	EPA 200.7	0.082		0.079		2.0	NC NC NC
Beryllium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.004	NC NC NC
Cadmium	mg/L	EPA 200.8	0.0001	U	0.0001	B	0.005	NC NC NC
Calcium	mg/L	EPA 200.7	32.2		28.7		-----	-----
Chromium	mg/L	EPA 200.8	0.0003	B FB	0.0006	FB	0.1	NC NC NC
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC NC NC
Iron	mg/L	EPA 200.7	0.33		0.34		-----	-----
Lead	mg/L	EPA 239.2	0.0001	U	0.0001	U	0.015	NC NC NC
Magnesium	mg/L	EPA 200.7	16.1		14.7		-----	-----
Manganese	mg/L	EPA 200.7	0.079		0.080		0.05	NC NC NC
Mercury	mg/L	EPA 245.1	0.0002	U	0.0003	B FB	0.002	NC NC NC
Molybdenum	mg/L	EPA 200.7	0.01	U	0.01	U	-----	-----
Nickel	mg/L	EPA 200.7	0.01	U	0.01	U	0.1	NC NC NC
Potassium	mg/L	EPA 200.7	6.0		5.9		-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC NC NC
Silicon	mg/L	EPA 200.7	13.5		13		-----	-----
Silver	mg/L	EPA 200.8	0.00005	U	0.00005	U	0.1	NC NC NC
Sodium	mg/L	EPA 200.7	73.6		81.8		-----	-----
Thallium	mg/L	EPA 200.8	0.00005	U	0.0001	U	0.002	NC NC NC
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC NC NC
Zinc	mg/L	EPA 200.7	0.02	B FB	0.01	U	5.0	NC NC NC
Wet Chemistry								
Ammonia as NH3-N	mg/L	EPA 350.1	0.13	B	0.14	B	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	B FB	0.05	B	10.0	NC NC NC
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	U	1.0	NC NC NC
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	B FB H	0.05	BH	10.0	NC NC NC
Chloride	mg/L	EPA 325.2	6		7		-----	-----
Fluoride	mg/L	EPA 340.2	0.9		0.7		4.0	NC NC NC
Sulfate	mg/L	EPA 375.3	70		70		-----	-----
pH	SI units	EPA 150.1	8.2	H	7.4	H	6.5 - 8.5	NC NC NC
Conductivity	umhos/cm	EPA 120.1	617		551		-----	-----
Hardness as CaCO3	mg/L	SM 2340B	147		132		-----	-----
TSS	mg/L	EPA 160.2	10		38	H	-----	-----
TDS	mg/L	EPA 160.1	330		360		10000	NC NC NC
Alkalinity as CaCO3, t	mg/L	SM 2320B	228		231		-----	-----
Bicarbonate, total	mg/L	SM 2320B	228		231		-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	228		231		-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	U	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	U	-----	-----
Radiological								
Gross Alpha	pCi/L	EPA 900.0	0.85+/-2.1		0.0+/-3		15 pCi/L	NC NC NC
Gross Beta	pCi/L	EPA 900.0	4.68+/-3.3		8.24+/-3.7	FB	8 pCi/L ⁽⁴⁾	NC NC NC
Uranium, total	mg/L	EPA 200.8	0.00026	B FB	0.00030		0.03	NC NC NC
Radium 226	pCi/L	EPA 903.1	0.48+/-0.3		0.57+/-0.2		20 pCi/L ⁽⁵⁾	NC NC NC
Radium 228	pCi/L	EPA 904.0	1.5+/-0.8	FB	1.55+/-0.7	FB	20 pCi/L ⁽⁵⁾	NC NC NC
Thorium 230	pCi/L	ESM 4506	-0.27+/-0.24		0.52+/-0.46	FB	n/a	NC NC NC
Thorium 232	pCi/L	ESM 4506	0.08+/-0.26		0.46+/-0.42	FB	n/a	NC NC NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW97-11									
Monitoring Well and Sample Number			MW97-11-03-1		MW97-11-04-1		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels	
			Sample Date		10/7/2003	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾
Parameter	Units	Analytical Method	Result		Result	Result	Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Dissolved Metals									
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	----	----	----
Antimony	mg/L	EPA 204.2	0.001	B	0.0002	U	0.006	NC	NC
Arsenic	mg/L	EPA 206.2	0.0046		0.0034		0.01	NC	NC
Barium	mg/L	EPA 200.7	0.069		0.059		2.0	NC	NC
Beryllium	mg/L	EPA 200.8	0.0005	U	0.0001	U	0.004	NC	NC
Cadmium	mg/L	EPA 200.8	0.0005	U	0.0001	U	0.005	NC	NC
Calcium	mg/L	EPA 200.7	68		63.1		----	----	----
Chromium	mg/L	EPA 200.8	0.0007	FB	0.0001	B FB	0.1	NC	NC
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC	NC
Iron	mg/L	EPA 200.7	0.85		0.73		----	----	----
Lead	mg/L	EPA 239.2	0.0001	U	0.0002	B	0.015	NC	NC
Magnesium	mg/L	EPA 200.7	22		21.3		----	----	----
Manganese	mg/L	EPA 200.7	0.624		0.421		0.05	NC	NC
Mercury	mg/L	EPA 245.1	0.0002	U	0.0002	U	0.002	NC	NC
Molybdenum	mg/L	EPA 200.7	0.01	B	0.01	B	----	----	----
Nickel	mg/L	EPA 200.7	0.450		0.01	B	0.1	NC	NC
Potassium	mg/L	EPA 200.7	6.3		6.3		----	----	----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC	NC
Silicon	mg/L	EPA 200.7	17.6		16.6		----	----	----
Silver	mg/L	EPA 200.8	0.00005	U	0.00005	U	0.1	NC	NC
Sodium	mg/L	EPA 200.7	162		157		----	----	----
Thallium	mg/L	EPA 200.8	0.00005	U	0.0001	U	0.002	NC	NC
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC	NC
Zinc	mg/L	EPA 200.7	0.05	FB	1.94		5.0	NC	NC
Wet Chemistry									
Ammonia as NH3-N	mg/L	EPA 350.1	0.06	B	0.07	B	----	----	----
Nitrate as NO3-N	mg/L	Calculation	0.03	B FB	0.02	U	10.0	NC	NC
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	NC	NC
NO3-N + NO2-N	mg/L	EPA 353.2	0.03	B FB H	0.02	UH	10.0	NC	NC
Chloride	mg/L	EPA 325.2	133		124		----	----	----
Fluoride	mg/L	EPA 340.2	0.7		0.6		4.0	NC	NC
Sulfate	mg/L	EPA 375.3	150		160		----	----	----
pH	SI units	EPA 150.1	7.8	H	7.5	H	6.5 - 8.5	NC	NC
Conductivity	umhos/cm	EPA 120.1	1240		1150		----	----	----
Hardness as CaCO3	mg/L	SM 2340B	260		245		----	----	----
TSS	mg/L	EPA 160.2	24		62		----	----	----
TDS	mg/L	EPA 160.1	730		710		10000	NC	NC
Alkalinity as CaCO3, t	mg/L	SM 2320B	274		290		----	----	----
Bicarbonate, total	mg/L	SM 2320B	274		290		----	----	----
Bicarbonate, diss.	mg/L	SM 2320B	274		290		----	----	----
Carbonate	mg/L	SM 2320B	2	U	2	U	----	----	----
Hydroxide	mg/L	SM 2320B	2	U	2	U	----	----	----
Radiological									
Gross Alpha	pCi/L	EPA 900.0	6.9+-3.9		15.1+-5.9		15 pCi/L	NC	NC
Gross Beta	pCi/L	EPA 900.0	5.15+-4.1		15.2+-4.2	FB	8 pCi/L ⁽⁴⁾	NC	NC
Uranium, total	mg/L	EPA 200.8	0.01270		0.01070		0.03	NC	NC
Radium 226	pCi/L	EPA 903.1	1.13+-0.3		0.76+-0.4		20 pCi/L ⁽⁵⁾	NC	NC
Radium 228	pCi/L	EPA 904.0	1.32+-0.7	FB	1.79+-0.7	FB	20 pCi/L ⁽⁵⁾	NC	NC
Thorium 230	pCi/L	ESM 4506	0.05+-0.35		0.29+-0.55		n/a	NC	NC
Thorium 232	pCi/L	ESM 4506	0.12+-0.32		0.18+-0.48		n/a	NC	NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW97-12										
Monitoring Well and Sample Number			MW97-12-03-1		MW97-12-04-1		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels		
			Sample Date		Result	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Parameter	Units	Analytical Method								
Dissolved Metals										
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	-----	-----	-----	-----
Antimony	mg/L	EPA 204.2	0.0002	B	0.0003	B	0.006	NC	NC	NC
Arsenic	mg/L	EPA 206.2	0.0017		0.0012	B	0.01	NC	NC	NC
Barium	mg/L	EPA 200.7	0.035		0.036		2.0	NC	NC	NC
Beryllium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.004	NC	NC	NC
Cadmium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.005	NC	NC	NC
Calcium	mg/L	EPA 200.7	50.5		47.2		-----	-----	-----	-----
Chromium	mg/L	EPA 200.8	0.0006	FB	0.004		0.1	NC	NC	NC
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC	NC	NC
Iron	mg/L	EPA 200.7	0.13		0.09		-----	-----	-----	-----
Lead	mg/L	EPA 239.2	0.0001	U	0.0001	B	0.015	NC	NC	NC
Magnesium	mg/L	EPA 200.7	24.1		22.5		-----	-----	-----	-----
Manganese	mg/L	EPA 200.7	0.052		0.088		0.05	NC	NC	NC
Mercury	mg/L	EPA 245.1	0.0006	B	0.0002	B FB	0.002	NC	NC	NC
Molybdenum	mg/L	EPA 200.7	0.01	U	0.01	U	-----	-----	-----	-----
Nickel	mg/L	EPA 200.7	0.04	B	0.02	B	0.1	NC	NC	NC
Potassium	mg/L	EPA 200.7	6.8		6.5		-----	-----	-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC	NC	NC
Silicon	mg/L	EPA 200.7	14.5		14.3		-----	-----	-----	-----
Silver	mg/L	EPA 200.8	0.00005	U	0.00005	U	0.1	NC	NC	NC
Sodium	mg/L	EPA 200.7	118		116		-----	-----	-----	-----
Thallium	mg/L	EPA 200.8	0.00005	U	0.0001	U	0.002	NC	NC	NC
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC	NC	NC
Zinc	mg/L	EPA 200.7	0.02	B FB	0.01	B	5.0	NC	NC	NC
Wet Chemistry										
Ammonia as NH3-N	mg/L	EPA 350.1	0.08	B	0.08	B	-----	-----	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.08	B	10.0	NC	NC	NC
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	NC	NC	NC
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.08	BH	10.0	NC	NC	NC
Chloride	mg/L	EPA 325.2	16		16		-----	-----	-----	-----
Fluoride	mg/L	EPA 340.2	0.5	B	0.5	B	4.0	NC	NC	NC
Sulfate	mg/L	EPA 375.3	150		150		-----	-----	-----	-----
pH	SI units	EPA 150.1	8.1	H	7.9	H	6.5 - 8.5	NC	NC	NC
Conductivity	umhos/cm	EPA 120.1	878		764	H	-----	-----	-----	-----
Hardness as CaCO3	mg/L	SM 2340B	225		210		-----	-----	-----	-----
TSS	mg/L	EPA 160.2	128		1400	H	-----	-----	-----	-----
TDS	mg/L	EPA 160.1	550		550	H	10000	NC	NC	NC
Alkalinity as CaCO3, t	mg/L	SM 2320B	307		317	H	-----	-----	-----	-----
Bicarbonate, total	mg/L	SM 2320B	307		317	H	-----	-----	-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	307		317	H	-----	-----	-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	UH	-----	-----	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	UH	-----	-----	-----	-----
Radiological										
Gross Alpha	pCi/L	EPA 900.0	27+-10		144+-25		15 pCi/L	NC	NC	NC
Gross Beta	pCi/L	EPA 900.0	16.4+-7.7		134+-14		8 pCi/L ⁽⁴⁾	NC	NC	NC
Uranium, total	mg/L	EPA 200.8	0.0233 ⁽⁶⁾		0.05070		0.03	NC	NC	NC
Radium 226	pCi/L	EPA 903.1	3.83+-0.4		7.9+-0.7		20 pCi/L ⁽⁵⁾	NC	NC	NC
Radium 228	pCi/L	EPA 904.0	1.48+-0.7	FB	2.23+-0.8	FB	20 pCi/L ⁽⁵⁾	NC	NC	NC
Thorium 230	pCi/L	ESM 4506	-0.07+-0.35		1.09+-0.59	FB J	n/a	NC	NC	NC
Thorium 232	pCi/L	ESM 4506	0.44+-0.39		1.12+-0.55	FB	n/a	NC	NC	NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

Ambient Monitoring Well MW97-13									
Monitoring Well and Sample Number			MW97-13-03-1		MW97-13-04-1		Utah Groundwater Quality Standard ⁽¹⁾	Background Levels	
			Sample Date	10/6/2003	Result	Result		Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾
Parameter	Units	Analytical Method	Result	Result	Result	Result	Mean ⁽²⁾ (x)	Standard Deviation (std) ⁽²⁾	Maximum Background ⁽³⁾ Concentration
Dissolved Metals									
Aluminum	mg/L	EPA 200.7	0.03	U	0.03	U	-----	-----	-----
Antimony	mg/L	EPA 204.2	0.0005	B	0.0006	B	0.006	NC	NC
Arsenic	mg/L	EPA 206.2	0.0214		0.0205		0.01	NC	NC
Barium	mg/L	EPA 200.7	0.068		0.085		2.0	NC	NC
Beryllium	mg/L	EPA 200.8	0.0001	U	0.0001	U	0.004	NC	NC
Cadmium	mg/L	EPA 200.8	0.0004	B	0.0002	B	0.005	NC	NC
Calcium	mg/L	EPA 200.7	72.6		74.3		-----	-----	-----
Chromium	mg/L	EPA 200.8	0.0001	U	0.0002	B FB	0.1	NC	NC
Copper	mg/L	EPA 200.7	0.01	U	0.01	U	1.3	NC	NC
Iron	mg/L	EPA 200.7	0.16		0.11		-----	-----	-----
Lead	mg/L	EPA 239.2	0.0001	U	0.0002	B	0.015	NC	NC
Magnesium	mg/L	EPA 200.7	27.3		27.5		-----	-----	-----
Manganese	mg/L	EPA 200.7	0.161		0.166		0.05	NC	NC
Mercury	mg/L	EPA 245.1	0.0002	U	0.0002	U	0.002	NC	NC
Molybdenum	mg/L	EPA 200.7	0.11		0.11		-----	-----	-----
Nickel	mg/L	EPA 200.7	0.01	B	0.01	U	0.1	NC	NC
Potassium	mg/L	EPA 200.7	8.1		8.5		-----	-----	-----
Selenium	mg/L	SM 3500	0.001	U	0.001	U	0.05	NC	NC
Silicon	mg/L	EPA 200.7	14		14.2		-----	-----	-----
Silver	mg/L	EPA 200.8	0.00005	U	0.00005	U	0.1	NC	NC
Sodium	mg/L	EPA 200.7	114		118		-----	-----	-----
Thallium	mg/L	EPA 200.8	0.00005	U	0.0001	B	0.002	NC	NC
Vanadium	mg/L	EPA 200.7	0.005	U	0.005	U	n/a	NC	NC
Zinc	mg/L	EPA 200.7	0.02	B FB	0.01	B	5.0	NC	NC
Wet Chemistry									
Ammonia as NH3-N	mg/L	EPA 350.1	0.08	B	0.09	B	-----	-----	-----
Nitrate as NO3-N	mg/L	Calculation	0.02	U	0.02	U	10.0	NC	NC
Nitrite as NO2-N	mg/L	EPA 353.2	0.01	UH	0.01	UH	1.0	NC	NC
NO3-N + NO2-N	mg/L	EPA 353.2	0.02	UH	0.02	UH	10.0	NC	NC
Chloride	mg/L	EPA 325.2	36		41		-----	-----	-----
Fluoride	mg/L	EPA 340.2	0.6		0.6		4.0	NC	NC
Sulfate	mg/L	EPA 375.3	230		250		-----	-----	-----
pH	SI units	EPA 150.1	8.1	H	7.8	H	6.5 - 8.5	NC	NC
Conductivity	umhos/cm	EPA 120.1	1020		896		-----	-----	-----
Hardness as CaCO3	mg/L	SM 2340B	294		299		-----	-----	-----
TSS	mg/L	EPA 160.2	18		44	H	-----	-----	-----
TDS	mg/L	EPA 160.1	630		680	H	10000	NC	NC
Alkalinity as CaCO3, t	mg/L	SM 2320B	264		260		-----	-----	-----
Bicarbonate, total	mg/L	SM 2320B	264		260		-----	-----	-----
Bicarbonate, diss.	mg/L	SM 2320B	264		260		-----	-----	-----
Carbonate	mg/L	SM 2320B	2	U	2	U	-----	-----	-----
Hydroxide	mg/L	SM 2320B	2	U	2	U	-----	-----	-----
Radiological									
Gross Alpha	pCi/L	EPA 900.0	18.3+-9		7.17+-4.8		15 pCi/L	NC	NC
Gross Beta	pCi/L	EPA 900.0	11.7+-7.1		15.6+-4.3	FB	8 pCi/L ⁽⁴⁾	NC	NC
Uranium, total	mg/L	EPA 200.8	0.00654		0.00434		0.03	NC	NC
Radium 226	pCi/L	EPA 903.1	1.02+-0.4		1.7+-0.3		20 pCi/L ⁽⁵⁾	NC	NC
Radium 228	pCi/L	EPA 904.0	1.67+-0.8	FB	1.89+-0.8	FB	20 pCi/L ⁽⁵⁾	NC	NC
Thorium 230	pCi/L	ESM 4506	-0.18+-0.3		0.65+-0.51	FB	n/a	NC	NC
Thorium 232	pCi/L	ESM 4506	0.09+-0.31		0.2+-0.4		n/a	NC	NC

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS TO AMBIENT MONITORING
WELL BACKGROUND LEVELS OR UTAH GROUNDWATER QUALITY STANDARDS
Lisbon Valley Copper Project
October 2004

U = not detected at value given
B = detected at a value between method detection limit (MDL) and practical quantitation limit (PQL)
H = analysis exceeded method hold time
J = estimated detected value
UJ = estimated non-detect value
LB = detected in laboratory method or instrument blank
FB = detected in field blank or field rinse blank
n/a = not applicable
NC = not calculated as of this time
mg/L = milligrams per liter
umhos/cm = micromhos per centimeter
SI = standard international units
pCi/L = picocuries per liter
x = mean value
std = standard deviation

0.91 **Bolded** and boxed results indicate that the parameter exceeds the maximum background level (defined as the mean + 2 standard deviations) for ambient monitoring wells SLV1A, SLV2, SLV3, MW2A, and 94MW2.

0.4 **Bolded, boxed, and shaded** results indicate that the parameter exceeds the Utah Groundwater Quality Standards applied to ambient monitoring wells MW96-7A, MW96-7B, MW97-9, MW97-11, MW97-12, and MW97-13, and to other wells where background statistics for specific constituents have not been calculated.

- (¹) If no value is given, a groundwater standard has not been established for that parameter.
- (²) The mean background concentration and standard deviation numbers were calculated by the State of Utah Water Quality Board (and are shown in Table 1, Part II of the State of Utah Ground Water Quality Discharge Permit No. UGW370005, dated 16 January 1997) for ambient monitoring wells.
- (³) The maximum background concentration was calculated as the mean background concentration plus two standard deviations, based on the available data up to and including October 1996.
- (⁴) The standard is that activity which will cause a 4 mrem/year exposure; converted to pCi/L assuming that the beta activity is due to Sr-90 and a 2-liter per day intake of water.
- (⁵) The standard is combined radium ²²⁶ and radium ²²⁸ activity of 20.0 pCi/L.
- (⁶) The result exceeded the U standard of 0.02 mg/L in effect at the time of sampling. Uranium standard has since been raised to 0.03 mg/L.

Water levels were measured in 13 monitoring wells (SLV1A, SLV2, SLV3, MW2A, 94MW2, 94MW4, MW96-7A, MW96-7B, MW97-8, MW97-9, MW97-11, MW97-12 and MW97-13), three piezometers (SLV4, 98R7, 98R8) and one water well (PW97-2) from October 4-7, 2004. Table 5-1 provides the water levels measured in monitoring wells at the project site for April 1994 through October 2004.

Water levels were measured using an electronic water level indicator in accordance with the Standard Operating Procedure for Water Level Measurement (Attachment 1 of the Water Quality Monitoring QA/QC Plan.) The water level measurements were recorded to the nearest 0.01-foot to the top of the PVC or steel well casing. For consistency, the readings were taken on the north side of the well casing or at a designated measuring point for each well. Because the depth to water exceeds 900 feet in several wells, water level measurement can be complicated due to twisting and stretching of the water level indicator cable. Therefore, the minor variations in water levels should not be absolutely interpreted as real (or seasonal) changes for these deeper wells.

October 2004 - The static water level data collected during the October 2004 annual sampling event indicate that the measured water levels increased in seven monitoring wells since last measured during the annual sampling event in October 2003: SLV1A (0.37 feet), SLV2 (0.23 feet), MW2A (0.40 feet), 94MW2 (0.18 feet), 94MW4 (0.60 feet), MW96-7A (0.34 feet), and MW97-11 (3.51 feet). Water levels have continued to rise in well 94MW4 since the well was bailed dry in November 1998. The rate of rise has slowed from 32 in/yr in the first half of 1999 to 7.8 in/yr in 2004.

The measured water levels declined in five monitoring wells since last measured in October 2003: SLV3 (-3.14 feet), MW96-7B (-0.54 feet), MW97-9 (-0.23 feet), MW97-12 (-0.29 feet), MW97-13 (-0.19 feet), and Well SLV-3 had been pumped for water supply at relatively low average flow rates since April 2004, and this pumping may have affected the water levels in the well.

In addition, water levels dropped in pumping well PW97-2 (-5.29 feet) and observation piezometers 98R8 (-2.68 feet) and SLV4 (-12.82 feet), which are not included in the groundwater quality monitoring program.

TABLE 5-1

SUMMARY OF WATER LEVEL MEASUREMENT DATA FOR MONITORING WELLS
Lisbon Valley Copper Project
October 1994 through October 2004

Well Number	Elevation of Well Casing (ft-msl)	Date of SWL Measurement ¹		April 1994 Results	October 1994 Results	March 1995 Results	May 1995 Results	August 1995 Results	September 1995 Results	November 1995 Results	April 1996 Results	June 1996 Results	September 1996 Results	December 1996 Results	March 1997 Results	May 1997 Results
		1994	1995													
SLV1A 6483.5 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	296.54 6186.96	294.74 6188.76	293.42 6190.08	297.26 6186.20	298.00 6185.50	298.78 6184.72	299.66 6183.84	301.34 6182.16	301.67 6181.83	301.86 6181.64	302.42 6181.08	302.23 6181.27	302.23 6181.08	302.23 6181.27	
SLV2 6379.3 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	83.60 6295.70	83.16 6296.14	82.41 6296.89	82.36 6296.94	82.28 6296.92	82.29 6297.01	82.38 6297.29	82.01 6296.92	82.08 6297.30	82.11 6297.19	82.89 6296.41	82.62 6296.68	82.62 6296.68	82.62 6296.68	
SLV3 6461.50	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	277.33 6191.72	278.80 6190.25	274.77 6194.28	275.78 6193.27	301.38 6167.67	299.09 6169.96	295.11 6173.94	290.10 6178.95	288.78 6180.27	287.30 6181.75	287.71 6181.34	287.14 6181.91	288.01 6181.04	288.01 6181.04	
SLV4 ² 6396.7	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	93.95 6302.75	94.71 6301.99	94.60 6302.10	95.79 6300.91	94.50 6302.20	93.71 6302.99	94.25 6302.45	95.59 6301.11	93.14 6303.56	98.11 6298.59	96.10 6300.60	95.82 6300.88	95.13 6301.57	95.13 6301.57	
MW2A 6452.8 ^{3,4}	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	267.00 6187.49	267.70 6186.79	266.30 6188.19	267.38 6187.11	288.06 6164.74	287.97 6164.83	285.36 6167.44	280.74 6172.06	278.90 6173.90	278.94 6173.86	279.08 6173.72	279.64 6173.16	279.70 6173.10	279.70 6173.10	
94MW2 6415.1	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA 6155.52	NA 6155.62	NA 6153.62	NA 6157.30	NA 6157.87	NA 6158.01	NA 6158.73	NA 6158.89	NA 6158.94	NA 6158.99	NA 6158.19	NA 6158.36	NA 6158.36	NA 6158.36	
94MW4 ² 6511.2 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NM NA	Dry NA	Dry NA	Dry NA	410.30 6100.90	NM NA	410.54 6100.66	410.32 6100.88	410.18 6101.02	410.98 6101.28	412.01 6100.22	411.43 6099.19	411.43 6099.77		
94MW6 6287.50	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA 60.03	60.08 6227.47	60.18 6227.42	60.03 6227.32	NA 6227.47	NA 6227.19	60.39 NA	60.69 NA	60.63 NA	60.65 NA	60.29 NA	60.45 NA	60.45 NA		
MW96-7A 6448.1 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW96-7B 6448.3 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW97-8 6450.2 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW97-9 6523.9 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW97-11 6606.8 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW97-12 6469.0 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	
MW97-13 6397.6 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	

feet above mean sea level
feet below top of casing
static water level

ft-msl
ft-btoc
SWL
NA
NM

¹ water level measured to the top of the PVC or steel well casing on the north side of the well

² piezometer

³ elevation of ground surface was used prior to August 1995 6454.49; new surface casing installed in August 1995 with elevation of 6457.69.

⁴ elevation of surface casings were surveyed in November 1997.

⁵ previous open borehole; monitoring well constructed with 2.5-inch schedule 80 PVC in August 1997.

⁶ not measured since these wells are not on the accelerated sampling schedule

⁷ reported water level elevation was corrected for well casing elevation

TABLE 5-1

SUMMARY OF WATER LEVEL MEASUREMENT DATA FOR MONITORING WELLS
Lisbon Valley Copper Project
October 1994 through October 2004

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⁷ reported water level elevation was corrected for well casing elevation

TABLE 5-1

SUMMARY OF WATER LEVEL MEASUREMENT DATA FOR MONITORING WELLS
Lisbon Valley Copper Project
October 1994 through October 2004

Well Number	Elevation of Well Casing (ft-msl)	Date of SWL Measurement ¹		May 2000 Results	November 2000 Results	May 2001 Results	November 2001 Results	October 2002 Results	October 2003 Results	October 2004 Results
		2000	2001							
SLV1A	6483.5 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	292.54 6190.96	291.29 6192.21	290.58 6192.92	290.61 6192.89	290.50 6193.00	290.40 6193.10	290.03 6193.47	
SLV2	6379.3 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	79.78 6299.52	79.53 6299.77	79.45 6299.85	79.26 6300.04	78.90 6300.40	78.51 6300.79	78.28 6301.02	
SLV3	6461.50	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	275.17 6193.88	273.54 6187.96	268.88 6192.62	272.86 6188.64	272.57 6188.93	268.88 6192.62	272.02 6189.48	
SLV4 ²	6396.7	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	77.16 6319.54	84.58 6312.12	87.29 6309.41	87.21 6309.49	88.90 6309.78	88.59 6308.11	101.41 6295.29	
MW2A	6452.8 ^{3,4}	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	266.04 6186.76	264.19 6188.61	264.26 6188.54	263.80 6189.00	263.48 6189.32	262.98 6189.82	262.58 6190.22	
94MW2	6415.1	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	248.76 6166.34	248.38 6166.72	248.29 6166.81	247.84 6167.26	247.42 6167.68	246.83 6168.27	246.65 6168.45	
94MW4 ³	6511.2 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	493.24 6017.96	492.44 6018.76	491.91 6019.29	491.31 6019.89	490.24 6020.96	489.36 6021.84	488.76 6022.44	
94MW6	6287.50	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	NM	NM	NM	NM	NM	NM	NM	NM
MW96-7A	6448.1 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	261.66 6186.44	259.91 6188.19	259.78 6188.32	258.27 6189.83	258.93 6189.17	258.60 6189.50	258.26 6189.84	
MW96-7B	6448.3 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	908.98 5533.19	909.10 5533.20	909.38 5538.92	906.10 5542.20	909.38 5538.92	909.28 5539.02	909.82 5538.48	
MW97-8	6450.2 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
MW97-9	6523.9 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	985.26 5538.64	985.24 5538.66	982.89 5541.01	985.77 5538.13	985.62 5538.28	985.90 5538.00	986.13 5537.78	
MW97-11	6606.8 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	851.53 5755.27	851.64 5755.16	852.02 5754.78	831.94 5754.86	852.06 5754.74	855.50 5751.30	851.99 5754.81	
MW97-12	6469.0 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	930.39 5538.61	930.33 5538.67	929.85 5539.15	930.48 5538.52	930.68 5538.32	930.55 5538.45	930.84 5538.16	
MW97-13	6397.6 ⁴	Depth to SWL (ft-btoc) SWL Elevation (ft-msl)	638.34 5759.26	638.37 5759.23	638.87 5758.73	636.88 5760.72	638.37 5759.23	638.49 5759.11	638.68 5758.92	

feet above mean sea level
 feet below top of casing
 static water level
 not applicable
 not measured

¹ water levels measured to the top of the PVC or steel well casing on the north side of the well

² piezometer

³ elevation of ground surface was used prior to August 1995
 in August 1995 with elevation of 6457.69.

⁴ elevation of surface casing were surveyed in November 1997.

⁵ open borehole; monitoring well constructed with 2.5-inch schedule 80 PVC in August 1997.

⁶ not measured since these wells are not on the accelerated sampling schedule

⁷ reported water level elevation was corrected for well casing elevation

Attachment A
Field Sampling Data Sheets For Groundwater Samples

October 2004 Sampling Event

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW97-13 Date: Oct. 5, 2004
 Well Diameter (in): 2" Stainless Steel Time: 12:35

Sample Identification: MW97-13-04-1
 Sampler's Signature: CJ Banech

Depth to Water Level (ft. - btoc): 633.68'
 Depth to Bottom of well (ft.- btoc): 1417.30'
 Well Casing Volume (gallons): 127.5
 Volume to be Evacuated (gallons): 382.5

FIELD SAMPLING PARAMETERS

	<u>10/5/04</u>					
	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>8:04</u>	<u>15:47</u>	<u>16:20</u>	<u>9:26</u>	<u>12:29</u>	<u>12:35</u>
Volume (gallons)	<u>3</u>	<u>100</u>	<u>128</u>	<u>256</u>	<u>381</u>	<u>384</u>
Temperature (°F/C)	<u>58.5/14.9</u>	<u>66.7/19.3</u>	<u>66.0/18.9</u>	<u>64.5/18.1</u>	<u>66.8/19.3</u>	<u>66.8/19.3</u>
pH (SI units)	<u>7.53</u>	<u>7.42</u>	<u>7.27</u>	<u>7.17</u>	<u>7.18</u>	<u>7.15</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>951</u>	<u>779</u>	<u>727</u>	<u>360</u>	<u>1020</u>	<u>910</u>
Color	<u>clr.</u>	<u>clr.</u>	<u>clr.</u>	<u>clr.</u>	<u>light grey</u>	<u>light grey</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

Well bailed over two days as bailer/pump truck broke down during 1st vol. bailing

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW97-12 Date: Oct. 5, 2004
 Well Diameter (in): 2" Stainless Steel Time: 16:36

Sample Identification: MW97-12-04-1
 Sampler's Signature: CJ Palmer

Depth to Water Level (ft. - btoc): 930.84
 Depth to Bottom of well (ft.- btoc): 955.0
 Well Casing Volume (gallons): 4.0
 Volume to be Evacuated (gallons): 12.0

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>15:46</u>	<u>16:00</u>	<u>16:13</u>	<u>16:27</u>		<u>16:36</u>
Volume (gallons)	<u>1.5</u>	<u>4.5</u>	<u>7.5</u>	<u>12</u>		<u>13.5</u>
Temperature (°F/C)	<u>66.0/18.9</u>	<u>65.7/18.7</u>	<u>64.3/17.9</u>	<u>64.8/18.2</u>		<u>63.8/17.7</u>
pH (SI units)	<u>7.61</u>	<u>8.34</u>	<u>7.96</u>	<u>8.01</u>		<u>7.68</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>864</u>	<u>876</u>	<u>887</u>	<u>891</u>		<u>936</u>
Color	<u>Clr</u>	<u>Lt.Brn</u>	<u>Lt. Brn</u>	<u>Lt. Brn</u>		<u>Lt. Brn</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: Rinsate Sample From Briler, MW97-12-04-R
⑥ 15:10

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW197-11 Date: Oct. 6, 2004
 Well Diameter (in): 3" Sampled at: Steel Time: 16:10
 Sample Identification: MW197-11-04-1
 Sampler's Signature: CFB
 Depth to Water Level (ft. - btoc): 851.99
 Depth to Bottom of well (ft.- btoc): 1097.90
 Well Casing Volume (gallons): 40.3
 Volume to be Evacuated (gallons): 120.9

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>11:25</u>	<u>13:00</u>	<u>14:32</u>	<u>16:02</u>		<u>16:10</u>
Volume (gallons)	<u>2.5</u>	<u>40</u>	<u>80</u>	<u>120</u>		<u>122</u>
Temperature (°F/C)	<u>62.4/17.4</u>	<u>60.3/19.1</u>	<u>61.2/16.2</u>	<u>61.2/16.2</u>		<u>59.6/15.3</u>
pH (SI units)	<u>7.21</u>	<u>5.71</u>	<u>6.38</u>	<u>6.80</u>		<u>6.52</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>1220</u>	<u>1100</u>	<u>1430</u>	<u>1490</u>		<u>1590</u>
Color	<u>clr.</u>	<u>clr.</u>	<u>4t. Brn</u>	<u>clr</u>		<u>4t. Brn</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW97-9 Date: Oct. 7, 2004
 Well Diameter (in): 2" stainless steel Time: 10:15

Sample Identification: MW97-9-04-1
 Sampler's Signature: JF Bauer

Depth to Water Level (ft. - btoc): 986-125
 Depth to Bottom of well (ft.- btoc): 1070-80
 Well Casing Volume (gallons): 13.9
 Volume to be Evacuated (gallons): 41.7

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>8:12</u>	<u>8:45</u>	<u>9:00</u>	<u>10:05</u>		<u>10:15</u>
Volume (gallons)	<u>2.5</u>	<u>1.5</u>	<u>2.5</u>	<u>4.2</u>		<u>44.5</u>
Temperature (°F/C)	<u>59.7/15.4</u>	<u>52.5/14.7</u>	<u>56.9/13.8</u>	<u>60.8/16.0</u>		<u>62.4/15.8</u>
pH (SI units)	<u>6.86</u>	<u>7.74</u>	<u>7.74</u>	<u>7.14</u>		<u>7.17</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>545</u>	<u>613</u>	<u>612</u>	<u>637</u>		<u>639</u>
Color	<u>clr.</u>	<u>clr.</u>	<u>clr.</u>	<u>clr.</u>		<u>clr.</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW96-TB Date: Dec. 6 2004
 Well Diameter (in): 4" Steel Time: 13:46

Sample Identification: MW96-TB-04-1
 Sampler's Signature: JFB

Depth to Water Level (ft. - btoc): 902.32
 Depth to Bottom of well (ft.- btoc): 1000.98
 Well Casing Volume (gallons): 59.3
 Volume to be Evacuated (gallons): 178.0

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>10:21</u>	<u>11:40</u>	<u>12:40</u>	<u>13:42</u>		<u>13:46</u>
Volume (gallons)	<u>8</u>	<u>60</u>	<u>120</u>	<u>180</u>		<u>188</u>
Temperature (°F/C)	<u>68.0/20.0</u>	<u>69.0/20.6</u>	<u>71.4/21.9</u>	<u>66.4/19.1</u>		<u>67.0/19.4</u>
pH (SI units)	<u>3.32</u>	<u>7.98</u>	<u>7.59</u>	<u>7.42</u>		<u>7.43</u>
Conductivity (µS/cm)	<u>751</u>	<u>680</u>	<u>652</u>	<u>730</u>		<u>728</u>
Color	<u>Clr.</u>	<u>BLK</u>	<u>BLK</u>	<u>Grey</u>		<u>Grey</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: Field Blank Sample #13/05, MW96-TB-04-FB

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MW96-7A Date: Oct. 6, 2004
 Well Diameter (in): 2" PVC Time: 9:21

Sample Identification: MW96-7A-04-1
 Sampler's Signature: CABauer

Depth to Water Level (ft. - btoc): 258.26
 Depth to Bottom of well (ft.- btoc): 411.60
 Well Casing Volume (gallons): 25.1
 Volume to be Evacuated (gallons): 75.3

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>8:10</u>	<u>8:35</u>	<u>8:58</u>	<u>9:23</u>		<u>9:27</u>
Volume (gallons)	<u>2</u>	<u>24</u>	<u>50</u>	<u>74</u>		<u>76</u>
Temperature (°F/C)	<u>54.9/12.7</u>	<u>52.7/12.2</u>	<u>55.0/12.8</u>	<u>52.8/13.2</u>		<u>56.5/13.6</u>
pH (SI units)	<u>6.84</u>	<u>7.07</u>	<u>7.01</u>	<u>7.06</u>		<u>7.06</u>
Conductivity (µS/cm)	<u>1490</u>	<u>1520</u>	<u>1570</u>	<u>1620</u>		<u>1790</u>
Color	<u>4. grey</u>	<u>clr.</u>	<u>clr.</u>	<u>clr.</u>		<u>clr.</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: 94MNZ Date: Oct. 4, 2004
 Well Diameter (in): 2" PVC Time: 15:25

Sample Identification: 94MNZ-04-1
 Sampler's Signature: CJ Brown

Depth to Water Level (ft. - btoc): 246.65'
 Depth to Bottom of well (ft.- btoc): 274.26'
 Well Casing Volume (gallons): 4.5
 Volume to be Evacuated (gallons): 13.5

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>15:00</u>	<u>15:06</u>	<u>15:11</u>	<u>15:17</u>		<u>15:25</u>
Volume (gallons)	<u>2</u>	<u>6</u>	<u>12</u>	<u>14</u>		<u>16</u>
Temperature (°F/C)	<u>61.9/16.6</u>	<u>60.6/15.9</u>	<u>59.4/15.2</u>	<u>60.0/15.6</u>		<u>59.8/15.4</u>
pH (SI units)	<u>6.71</u>	<u>6.36</u>	<u>6.44</u>	<u>6.41</u>		<u>6.32</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>1020</u>	<u>1020</u>	<u>988</u>	<u>1070</u>		<u>1010</u>
Color	<u>clr</u>	<u>light grey cloudy</u>	<u>light grey cloudy</u>	<u>light grey cloudy</u>		<u>light grey cloudy</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: MWZA Date: Oct. 5, 2004
 Well Diameter (in): 2" PVC. Time: 14:02

Sample Identification: MWZA-04-1
 Sampler's Signature: JF Brown

Depth to Water Level (ft. - btoc): 262.53
 Depth to Bottom of well (ft.- btoc): 323.20
 Well Casing Volume (gallons): 9.9
 Volume to be Evacuated (gallons): 30.0

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>13:26</u>	<u>13:31</u>	<u>13:47</u>	<u>13:53</u>		<u>14:02</u>
Volume (gallons)	<u>2</u>	<u>10</u>	<u>20</u>	<u>28</u>		<u>30</u>
Temperature (°F/C)	<u>51.6/14.2</u>	<u>56.3/13.5</u>	<u>56.1/13.4</u>	<u>56.2/13.4</u>		<u>56.2/13.4</u>
pH (SI units)	<u>6.63</u>	<u>6.71</u>	<u>6.67</u>	<u>6.67</u>		<u>6.67</u>
Conductivity (µS/cm)	<u>2700</u>	<u>2560</u>	<u>2630</u>	<u>2620</u>		<u>2620</u>
Color	<u>clr.</u>	<u>clr.</u>	<u>cloudy</u>	<u>cloudy</u>		<u>cloudy</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 - ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 - ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 - ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 - ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 - ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: SLV3 Date: Oct. 4, 2004
 Well Diameter (in): 8" Steel Time: 13:40

Sample Identification: SLV3-04-1
 Sampler's Signature: CJ Bauer

Depth to Water Level (ft. - btoc): 272.02'
 Depth to Bottom of well (ft.- btoc): 344.10'
 Well Casing Volume (gallons): 186.0
 Volume to be Evacuated (gallons): 568.0

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>13:12</u>	<u>13:25</u>	<u>13:31</u>	<u>13:37</u>		<u>13:40</u>
Volume (gallons)	<u>5</u>	<u>186</u>	<u>372</u>	<u>558</u>		<u>562</u>
Temperature (°F/C)	<u>61.9/16.6</u>	<u>61.9/16.6</u>	<u>59.7/15.4</u>	<u>59.5/15.3</u>		<u>60.4/15.8</u>
pH (SI units)	<u>6.70</u>	<u>6.42</u>	<u>6.54</u>	<u>6.49</u>		<u>6.67</u>
Conductivity (µS/cm)	<u>1990</u>	<u>1960</u>	<u>2090</u>	<u>2090</u>		<u>2060</u>
Color	<u>lt. grey</u>	<u>clr</u>	<u>clr</u>	<u>clr</u>		<u>clr</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 - ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 - ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 - ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 - ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 - ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: Field Duplicate Sample SLV3-04-D @ 13:40

Comments

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: SLV2 Date: Oct. 6, 2004
 Well Diameter (in): 2" PVC Time: 15:20

Sample Identification: SLV2-0A-1
 Sampler's Signature: CFB/BLW

Depth to Water Level (ft. - btoc): 73.28
 Depth to Bottom of well (ft.- btoc): 139.18
 Well Casing Volume (gallons): 13.3
 Volume to be Evacuated (gallons): 39.9

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>14:18</u>	<u>14:25</u>	<u>15:00</u>			<u>15:20</u>
Volume (gallons)	<u>2</u>	<u>14</u>	<u>23</u>			<u>25 1/2</u>
Temperature (°F/C)	<u>57.8/13.8</u>	<u>57.5/14.2</u>	<u>57.9/14.4</u>			<u>57.2/14.0</u>
pH (SI units)	<u>7.11</u>	<u>7.12</u>	<u>7.87</u>			<u>8.06</u>
Conductivity (µS/cm)	<u>664</u>	<u>654</u>	<u>666</u>			<u>652</u>
Color	<u>Clr.</u>	<u>Lt. Org. Brn</u>	<u>Brn</u>			<u>Brn</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 - ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 - ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 - ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 - ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 - ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments
Well bailed dry after 23 gallons.

LISBON VALLEY COPPER PROJECT
Ground Water Field Sampling Data Sheet

WELL INFORMATION

Well ID: SLVIA Date: Oct. 5, 2004
 Well Diameter (in): 2" PVC Time: 18:25

Sample Identification: SLVIA-04-1
 Sampler's Signature: CABrown

Depth to Water Level (ft. - btoc): 290.03
 Depth to Bottom of well (ft.- btoc): 316.32
 Well Casing Volume (gallons): 4.3
 Volume to be Evacuated (gallons): 12.9

FIELD SAMPLING PARAMETERS

	<u>Initial</u>	<u>1st Vol.</u>	<u>2nd Vol.</u>	<u>3rd Vol.</u>	<u>4th Vol.</u>	<u>Sample</u>
Time	<u>18:02</u>	<u>18:09</u>	<u>18:16</u>	<u>18:22</u>		<u>18:25</u>
Volume (gallons)	<u>3</u>	<u>4</u>	<u>3</u>	<u>12</u>		<u>14</u>
Temperature (°F/C)	<u>54.7/12.6</u>	<u>53.2/12.9</u>	<u>55.1/12.8</u>	<u>54.7/12.6</u>		<u>54.6/12.6</u>
pH (SI units)	<u>6.56</u>	<u>6.45</u>	<u>6.61</u>	<u>6.62</u>		<u>6.62</u>
Conductivity ($\mu\text{S}/\text{cm}$)	<u>3290</u>	<u>3590</u>	<u>3560</u>	<u>3590</u>		<u>3590</u>
Color	<u>lt. grey</u>	<u>lt. grey</u>	<u>lt. grey</u>	<u>lt. grey</u>		<u>lt. grey</u>

SAMPLE COLLECTION AND ANALYSES

<u>Containers</u>	<u>Color</u>	<u>Filtered/Raw</u>	<u>Preservative</u>	<u>Analyses</u>
250 – ml plastic	white	filtered	none, / (4°C)	diss. alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
125 – ml plastic	green	filtered	HNO ₃ / (4°C)	dissolved metals
125 – ml plastic	yellow	raw	H ₂ SO ₄ / (4°C)	ammonia as N
250 – ml plastic	red	raw	HNO ₃ / (4°C)	total uranium
500 – ml plastic	none	raw	none, / (4°C)	total alkalinity & TSS
2 gallon plastic	red	raw	HNO ₃ / (4°C)	gross alpha, gross beta, radium ^{226/228} , thorium ^{230/232}
Tube	blue	raw	none, / (4°C)	pH & conductivity

QA/QC Samples: _____

Comments

L 48197

Summo USA Corporation

**1776 Lincoln St., Suite 900
Denver, Colorado 80203
Phone: (303) 861-5400**

Chain of Custody Record

Send report with laboratory QA to:

C. E. Bauer

565 Powderhorn Dr.

Monument, CO 80132 Fax: (719) 481-1164

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L48197

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L48197

L48197

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Send report with laboratory QA to:

C. F. Bauer
 565 Powderhorn Dr.
 Monument, CO 80132 Fax: (719) 481-1164

Lisbon Valley Copper Project

ANALYSES

ACZ Laboratories, Inc.
 2773 Downhill Drive
 Steamboat Springs, CO
 (970) 879-6590

REMARKS / COMMENTS

Matrix: Water
 Samples Stored on Ice

- 1) Dissolved alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
- 2) Gross alpha, gross beta, radium $^{226/228}$, thorium $^{230/232}$
- 3) Centrifuge tube for pH & conductivity

Notes:

- Follow analytical suite for project with required detection limits
- Invoice:
 Summo USA Corp.
 1776 Lincoln St.
 Suite 900
 Denver, CO 80203

Sampled By: Charles F. Bauer	Total Number of Containers	24
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Sampler's Signature 	Contact Person: Charles F. Bauer Phone: (719) 481-1787	Fax: (719) 481-1164
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Relinquished By: 	Date / Time: 10-7-04/13:00	Received By: 	Date / Time: 10-8-04 1000
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Method of Shipment: Federal Express	846148308191
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Summo USA Corporation

1776 Lincoln St., Suite 900
Denver, Colorado 80203
Phone: (303) 861-5400

Chain of Custody Record

Send report with laboratory QA to:
C. F. Bauer
565 Powderhorn Dr.
Monument, CO 80132 Fax: (719) 481-1164

Lisbon Valley Copper Project

ANALYSES

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO
(970) 879-6590

REMARKS / COMMENTS

**Matrix: Water
Samples Stored on Ice**

SLVZ-04-1 10-6-04 15:20 1 1 1 1 1 1 2 1 8
W/21.11-21.1 1 1 1 1 1 1 1 1 1

MW99-11-04-1 10-6-04 16:10 1 1 1 1 1 2 1 8

- 1) Dissolved alkalinity, chloride, hardness, sulfate, nitrate, nitrite, nitrate/nitrite, TDS, fluoride
 - 2) Gross alpha, gross beta, radium $^{226/228}$, thorium $^{230/232}$
 - 3) Centrifuge tube for pH & conductivity

Notes:

- Follow analytical suite for project with required detection limits
 - Invoice:
Summo USA Corp.
1776 Lincoln St.
Suite 900
Denver, CO 80203

Sampled By:

Charles F. Bauer

Total Number of
Containers

16

Sampler's Signature

J. Bauer

Contact Person:

Charles F. Bauer

Phone: (719) 481-1787

Fax: (719) 481-1164

Date / Time:

Relinquished By:

Date / Time:

Received By

Date / Time:

Method of Shipment:

Federal Express

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L48197

Summo USA Corporation

**1776 Lincoln St., Suite 900
Denver, Colorado 80203
Phone: (303) 861-5400**

Chain of Custody Record

Send report with laboratory QA to:

C. F. Bauer
565 Powderhorn Dr.
Monument, CO 80132

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LISBON VALLEY COPPER PROJECT
Static Water Level Field Data Sheet

Instrument: Slope Indicator 1250

Sampler: C. Bauer

Date: Oct. 4 to Oct. 7, 2004

Weather: Sunny to cloudy with rain, cool to warm

Monitoring Well	Date / Time	Elevation (Top of Well Casing) Ft. - msl	Depth to Static Water Level Ft. - btoc	Total Depth of Well Ft. - btoc	Static Water Elevation Ft. - msl
SLV1A	10-5-04 / 18:25	6483.50	290.03	316.32	6193.47
SLV2	10-6-04 / 14:10	6379.30	78.28	159.18	6301.02
SLV3	10-4-04 / 11:10	6461.50	272.02	344.10	6189.48
MW2A	10-5-04 / 13:15	6452.80	262.58	323.20	6190.22
94MW2	10-4-04 / 11:55	6415.10	246.65	274.26	6168.45
94MW4	10-4-04 / 9:25	6511.20	483.76	500.90	6022.44
MW96-7A	10-4-04 / 9:10	6448.10	258.26	411.60	6189.84
MW96-7B	10-4-04 / 8:55	6448.30	909.82	1000.98	5538.48
MW97-8	10-5-04 / 9:56	6450.20	Dry	369.90	—
MW97-9	10-7-04 / 7:25	6523.90	986.125	1070.80	5537.78
MW97-11	10-6-04 / 10:50	6606.80	851.99	1097.90	5754.81
MW97-12	10-5-04 / 15:25	6469.00	930.84	955.00	5538.16
MW97-13	10-4-04 / 7:40	6397.60	638.68	1417.30	5758.92
PW97-2	10-4-04 / 10:50	6397.60	161.40	340.00	6236.20
98R-7	10-4-04 / 10:35	6365.20	64.37	335.00	6300.83
98R-8	10-4-04 / 10:20	6353.50	111.53	395.00	6241.97
SLV4	10-7-04 / 10:53	6396.70	101.41		6295.29

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

Part 1 – QC Review

Analytical Data QC Review And Laboratory Data Sheets

GROUNDWATER LABORATORY ANALYTICAL DATA
OCTOBER 2004
LISBON VALLEY COPPER PROJECT

This report summarizes the Quality Control (QC) Review of the analytical data for the Lisbon Valley Copper Project. The groundwater samples were analyzed for general inorganic parameters, dissolved metals, and radiological parameters by ACZ Laboratories, Inc. in Steamboat Springs, Colorado. The analytical data were reported in ACZ Laboratories data package L48197. The table below lists the samples reported in the data package.

DATA PACKAGES L43331	
ACZ Lab ID	Field ID
L48197-01	MW97-13-04-1
L48197-02	MW2A-04-1
L48197-03	MW96-7B-04-1
L48197-04	MW96-7B-04-FB (field blank)
L48197-05	MW97-12-04-1
L48197-06	MW97-12-04-R (rinsate blank)
L48197-07	SLV3-04-1
L48197-08	SLV3-04-D (field duplicate)
L48197-09	94MW2-04-1
L48197-10	MW97-9-04-1
L48197-11	SLV2-04-1
L48197-12	MW97-11-04-1
L48197-13	SLV1A-04-1
L48197-14	MW96-7A-04-1

The QC review consisted of checking holding times, method blank results, continuing calibration verification, laboratory control sample results, matrix spike/matrix spike duplicate results, laboratory duplicate results, field duplicate results, and field and rinsate blank results. If provided in the data package, the laboratory-determined acceptance ranges were used to evaluate the QC results obtained. In the absence of laboratory-determined acceptance limits, the general inorganic acceptance limits provided in the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review (February 1994) were used. Data qualification was issued using guidance from the Functional Guidelines. A QC parameter is only discussed if the results for that parameter did not satisfy the laboratory's or Functional

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

Guidelines' evaluation criteria. This report is concluded with an overall assessment of the data quality with respect to accuracy, precision, and completeness.

The QC samples (rinsate blank, field blank, and field duplicate samples) apply to all samples collected during October 2004, as the samples were analyzed in one laboratory batch or group.

The sample receipt form indicates that the samples were received in good condition in four coolers, at a receiving temperature of 1.5°C to 4.5°C. The receiving temperatures (as measured by the laboratory) were just outside of the recommended $4 \pm 2^\circ\text{C}$ for one of the four sample coolers. However, no data were qualified based on sample temperature upon arrival.

Holding Times - The pH holding time of "analyze immediately" was exceeded for all samples, as pH measurements were made 7 to 26 days after sample collection. (Samples were received at the lab 1 to 4 days after sample collection.) Consequently, all laboratory pH results were qualified by the laboratory using the symbol "H". In the past, samples which exceeded holding times were qualified by LVMC's QC reviewers using the symbol "J" for estimated. The new symbol (H) indicates that the sample results are considered to be estimated, because holding times were exceeded.

The nitrite (NO_2) holding time of 48 hours (2 days) was exceeded for 13 of the 14 samples (i.e., 10 real and 3 QA/QC samples) by several hours to 2 days. Sample 97MW9-04-1 was the only sample that did not exceed holding times for nitrite. Four additional samples (SLV2-04-1, MW97-11-04-1, MW96-7B-04-1, and MW96-7B-04-FB) were received at the laboratory within 48 hours of sampling, but could not be analyzed for nitrite within holding times. Consequently, nitrite results for all samples except 97MW9-04-1 have been qualified as estimated (H) because holding times were exceeded.

The total dissolved solids (TDS) holding time of 7 days was exceeded for 8 of the 14 samples (i.e., 6 real and 2 QA/QC samples). Although all of the samples were received at the lab within seven days of sample collection, the laboratory was unable to process most of the samples within holding times. Consequently, samples SLV1A-04-1, SLV3-04-1, SLV3-04-D, MW2A-04-1, 94MW2-04-1, MW97-12-04-1, MW97-12-04-R (rinsate blank), and MW97-13-04-1 TDS results have been qualified as estimated (H) because holding times were exceeded.

The total suspended solids (TSS) holding time of 7 days was exceeded for 9 of the 14 samples (i.e., 7 real and 2 QA/QC samples). Although all of the samples were received at the lab within seven days of sample collection, the laboratory was unable to process most of the samples within holding times. Consequently, samples SLV1A-04-1, SLV3-04-1, SLV3-04-D, MW2A-04-1, 94MW2-04-1, MW97-9-04-1, MW97-12-04-1, MW97-12-04-R (rinsate blank), and MW97-13-04-1 TSS results have been qualified as estimated (H) because holding times were exceeded.

Bicarbonate (HCO_3^{-2}), carbonate (CO_3^{2-}) and hydroxide (OH^-) alkalinity were analyzed past holding times in 4 of the 14 samples (i.e., 3 real and 1 QA/QC samples). Although all of the samples were received at the lab within seven days of sample collection, the laboratory was unable to process most of the samples within holding times. Consequently, samples MW2A-04-1, MW96-7B-04-1, MW96-7B-04-FB, and MW97-12-04-1 alkalinity results have been qualified as estimated (H) because holding times were exceeded.

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

All other constituents were analyzed within holding times.

Calibration Blanks and Method Blanks – The laboratory reagent blank (LRB) and laboratory prep blank water (PBW) samples met the laboratory QC criteria in all cases.

Rinsate Blank and Field Blank - Samples MW97-12-04-R and MW96-7B-04-FB were the rinsate and field blanks, respectively. Three analytes were detected at or above the MDL or LLD in the field blank and two in the rinsate blank. The table below lists the analytes detected in each blank and their respective concentrations.

Analyte	Units	Field Blank	Rinsate Blank
Chromium	mg/L	0.0002	0.0002
Iron	mg/L	ND	0.01 (DL)
Mercury	mg/L	ND	0.0003
Bicarbonate Alkalinity	mg/L	4.0	ND
Gross Beta	pCi/L	ND	5.540
Radium ²²⁸	pCi/L	1.01	ND
Thorium ²³⁰	pCi/L	1.15	ND
Thorium ²³²	pCi/L	0.45	ND

ND = Non-detect

DL = Detection limit

Radionuclides listed only where result > LLD (Lower Limit of Detection)

The sample data were qualified as follows:

- 1) Where the concentration in the field blank or the rinsate blank was greater than the detection limit (MDL) and the sample results were less than five times the rinsate or field blank concentrations, then the results were qualified with "FB". Consequently chromium results were qualified with "FB" for all samples except MW97-12-04-1. Mercury results for samples SLV1A-04-1, SLV2-04-1, SLV3-04-1, SLV3-04-1D, 94MW2-04-1, MW96-7A-04-1, MW97-9-04-1 and MW97-12-04-1 were qualified with "FB".
- 2) Where the concentration of radiological constituents in the field blank or the rinsate blank exceeded the calculated sample specific lower limit of detection (LLD), the results for all samples which were detected above the variance and at less than five times the rinsate or field blank concentrations were qualified with "FB". Consequently gross beta results for samples SLV2-04-1, MW96-7A-04-1, MW96-7B-04-1, MW97-9-04-1, MW97-11-04-1, and MW97-13-04-1 were qualified with "FB". Radium-228 results for ten of eleven samples (SLV1-04-01, SLV3-04-1, MW2A-04-1, 94MW2-04-1, MW96-7A-04-1, MW96-7B-04-1, MW97-9-04-1, MW97-11-04-1, MW97-12-04-1 and MW97-13-04-1) were qualified with "FB". Thorium-230 results for samples SLV3-04-1, MW2A-04-1, MW97-9-04-1, MW97-12-04-1 and MW97-13-04-1 were qualified with "FB", as were thorium-232 results for samples MW97-9-04-1 and MW97-12-04-1.

Laboratory Control Sample Analyses - The percent recovery of all laboratory control samples (LCSW) for all laboratory data packages were within the laboratory acceptance.

Field Duplicate Result Agreement - Samples SLV3-04-1 and SLV3-04-D were field duplicate samples. The agreement between the field duplicate results was considered to be acceptable for all analytes except thorium-230. The relative percent difference (RPD) between the parent and

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

field duplicate results for ammonia (38.1%) exceeded the $\leq 35\%$ acceptance criterion, however the results were less than the PQL therefore were not qualified. The radium-226 RPD results were within the $\leq 35\%$ acceptance criterion when error bands were considered. Four samples having Th²³⁰ results above the LLD and below 9.2 pCi/L were flagged as "J" estimated, on the basis of field duplicate sample agreement (SLV3-04-1, MW2A-04-1, MW97-12-04-1, and MW96-7B-04-FB.)

Overall Assessment of Data Quality and Usability

Detection Limits – The detection limits for all analytes reported as non-detect were equal to or less than the required detection limits stated in the discharge permit, with the exception of nitrite. The discharge permit lists a detection limit of 0.005 mg/L, while the MDL achieved by the laboratory was 0.02 mg/L. The detection limit is considered acceptable, however, because it is one-fifth (1/5th) the groundwater quality standard of 1.0 mg/L. Detection limits are shown in Table 1-1 and on the laboratory analytical data sheets in Attachment B.

Accuracy - Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy was measured as the percent recovery (%R) of an analyte in a reference standard or spiked sample. Percent recoveries for laboratory control sample analyses were used to evaluate the overall accuracy of the method on both a "clean" sample matrix (a laboratory fortified blank, or LFB) or a "real" sample matrix (an analytical spike [AS], or analytical spike duplicate [ASD]). Percent recoveries for matrix spike and matrix spike duplicate (MS/MSD) sample analyses (as applicable to the method) were used to evaluate the accuracy of the method with respect to the general site sample matrix. Percent recoveries were compared to the laboratory-determined acceptance ranges for each parameter measured. The analytical spike (AS) matrix recoveries were low for selenium (81.5%, outside of the acceptable limits of 85-115%). However, the method control sample recoveries were acceptable and no data were qualified based on Se percent recoveries.

Precision - Precision is defined as the agreement between a set of replicate measurements without assumption or knowledge of the true value. The relative percent difference between duplicate laboratory measurements (sample/sample duplicate results and/or matrix spike/matrix spike duplicate results) was used to evaluate the analytical precision attained. The RPDs were compared to the laboratory-determined acceptance limits (20%).

The RPD for ammonia (NH₃ as N) exceeded the 20% acceptance limit, with a 42.1% RPD for laboratory QC sample L48197-07DUP. However, sample concentrations in the QC sample were less than ten times the detection limit, and therefore no ammonia results were flagged. All other data were fully acceptable based on laboratory duplicate result agreement. The overall level of precision demonstrated for the analyses reported in this data set is considered to be acceptable.

Completeness – As such, the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the 2004 monitoring data is 100%.

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

Part 2 – 2004 Analytical Results

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV1A-04-1

 ACZ Sample ID: L48197-13
 Date Sampled: 10/05/04 18:25
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.06	0.3	10/25/04 20:18	wfg
Antimony, dissolved	M200.8 ICP-MS	0.0006	B		mg/L	0.0004	0.002	11/14/04 16:32	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.001	0.005	11/13/04 8:36	scp
Barium, dissolved	M200.7 ICP	0.009	B		mg/L	0.006	0.02	10/25/04 20:18	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/13/04 8:36	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0153			mg/L	0.0002	0.001	11/13/04 8:36	scp
Calcium, dissolved	M200.7 ICP	460			mg/L	0.4	2	10/25/04 20:18	scp
Chromium, dissolved	M200.8 ICP-MS	0.0008	B	FB	mg/L	0.0002	0.001	11/13/04 8:36	wfg
Copper, dissolved	M200.7 ICP		U		mg/L	0.02	0.1	10/25/04 20:18	wfg
Iron, dissolved	M200.7 ICP	0.98			mg/L	0.02	0.1	10/25/04 20:18	wfg
Lead, dissolved	M200.8 ICP-MS	0.0003	B		mg/L	0.0002	0.001	11/13/04 8:36	scp
Magnesium, dissolved	M200.7 ICP	205			mg/L	0.4	2	10/25/04 20:18	wfg
Manganese, dissolved	M200.7 ICP	1.61			mg/L	0.01	0.05	10/25/04 20:18	wfg
Mercury, dissolved	M245.1 CVAA	0.0005	B	FB	mg/L	0.0002	0.001	10/29/04 13:15	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.02	0.1	10/25/04 20:18	wfg
Nickel, dissolved	M200.7 ICP	0.03	B		mg/L	0.02	0.1	10/25/04 20:18	wfg
Potassium, dissolved	M200.7 ICP	19.6			mg/L	0.6	2	10/25/04 20:18	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U		mg/L	0.001	0.005	10/28/04 19:28	ak
Silica, dissolved	M200.7 ICP	10.1			mg/L	0.4	1	10/25/04 20:18	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:36	scp
Sodium, dissolved	M200.7 ICP	141			mg/L	0.6	2	10/25/04 20:18	wfg
Strontium, dissolved	M200.7 ICP	18.40			mg/L	0.05	0.3	10/26/04 21:19	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0003	B		mg/L	0.0002	0.001	11/13/04 8:36	scp
Uranium, total	M200.8 ICP-MS	0.0200			mg/L	0.0003	0.001	10/30/04 8:10	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 20:18	wfg
Zinc, dissolved	M200.7 ICP	0.40			mg/L	0.02	0.1	10/25/04 20:18	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 5:28	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV1A-04-1

 ACZ Sample ID: L48197-13
 Date Sampled: 10/05/04 18:25
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		455			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		455			mg/L	2	10	10/15/04 0:00	nim
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		455			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		455			mg/L	2	10	10/15/04 0:00	nim
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.5			%			11/17/04 0:00	calc
Sum of Anions		50.6			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		47.2			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	108			mg/L	2	10	10/21/04 16:59	ksj
Conductivity @25C	M120.1 - Meter	3630			umhos/cm	1	10	10/15/04 16:40	nim
Fluoride	SM4500F-C	0.5			mg/L	0.1	0.5	10/28/04 14:48	mah
Hardness as CaCO ₃	SM2340B - Calculation	1990			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂	0.04	B		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	BH	*	mg/L	0.02	0.1	10/11/04 20:09	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:09	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate	0.31	B	*	mg/L	0.05	0.5	10/26/04 0:09	jjr
pH (lab)	M150.1 - Electrometric	7.1	H		units	0.1	0.1	10/15/04 16:40	nim
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	3300	H	*	mg/L	10	20	10/13/04 15:39	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	336	H	*	mg/L	5	20	10/14/04 9:19	jah
Sulfate	M375.3 - Gravimetric	1830			mg/L	10	50	10/22/04 13:49	ktd
TDS (calculated)	Calculation	3070			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						11/17/04 0:00	calc

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**RadioChemistry
Analytical Results****Summo Minerals Corporation**

Project ID: LISBON VALLEY
 Sample ID: SLV1A-04-1
 Locator:

ACZ Sample ID: L48197-13
 Date Sampled: 10/05/04 18:25
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(%)	LLD	XQ	Units	Date	Analyst
Gross Alpha Prep:	M9310 Method	111	32	15		pCi/L	10/20/04 16:25 10/18/04 13:30	dbb dbb
Gross Beta Prep:	M9310 Method	54.7	18	22		pCi/L	10/20/04 16:25 10/18/04 13:30	dbb dbb
Radium 226 Prep:	M9315 Method	9.2	0.7	0.4		pCi/L	10/18/04 17:36 10/13/04 11:00	dbb dbb
Radium 228, total Prep:	M9320 Method	7.56	1.1	1.8		pCi/L	10/26/04 14:36 10/22/04 15:30	dbb dbb
Thorium 228 Prep:	ESM 4506 Method	0.43	0.26	0.22		pCi/L	10/28/04 9:43 10/26/04 10:00	grb grb
Thorium 230 Prep:	ESM 4506 Method	0.16	0.38	0.58	*	pCi/L	10/28/04 9:43 10/26/04 10:00	grb grb
Thorium 232 Prep:	ESM 4506 Method	0.05	0.33	0.22		pCi/L	10/28/04 9:43 10/26/04 10:00	grb grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV2-04-1

 ACZ Sample ID: L48197-11
 Date Sampled: 10/06/04 15:20
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method		Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP			U		mg/L	0.03	0.2	10/25/04 19:52	wfg
Antimony, dissolved	M200.8 ICP-MS		0.0005	B		mg/L	0.0002	0.001	11/14/04 16:12	scp
Arsenic, dissolved	M200.8 ICP-MS		0.0021	B		mg/L	0.0005	0.003	11/13/04 8:10	scp
Barium, dissolved	M200.7 ICP		0.046			mg/L	0.003	0.01	10/25/04 19:52	wfg
Beryllium, dissolved	M200.8 ICP-MS			U		mg/L	0.0001	0.0005	11/13/04 8:10	scp
Cadmium, dissolved	M200.8 ICP-MS			U		mg/L	0.0001	0.0005	11/13/04 8:10	scp
Calcium, dissolved	M200.7 ICP		56.3			mg/L	0.2	1	10/25/04 19:52	wfg
Chromium, dissolved	M200.8 ICP-MS		0.0001	B	Fβ	mg/L	0.0001	0.0005	11/13/04 8:10	scp
Copper, dissolved	M200.7 ICP			U		mg/L	0.01	0.05	10/25/04 19:52	wfg
Iron, dissolved	M200.7 ICP			U		mg/L	0.01	0.05	10/25/04 19:52	wfg
Lead, dissolved	M200.8 ICP-MS			U		mg/L	0.0001	0.0005	11/13/04 8:10	scp
Magnesium, dissolved	M200.7 ICP		23.6			mg/L	0.2	1	10/25/04 19:52	wfg
Manganese, dissolved	M200.7 ICP			U		mg/L	0.005	0.03	10/25/04 19:52	wfg
Mercury, dissolved	M245.1 CVAA		0.0003	B	Fβ	mg/L	0.0002	0.001	10/29/04 13:13	jjc
Molybdenum, dissolved	M200.7 ICP			U		mg/L	0.01	0.05	10/25/04 19:52	wfg
Nickel, dissolved	M200.7 ICP			U		mg/L	0.01	0.05	10/25/04 19:52	wfg
Potassium, dissolved	M200.7 ICP		2.4			mg/L	0.3	1	10/25/04 19:52	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride			U		mg/L	0.001	0.005	10/28/04 19:23	ak
Silica, dissolved	M200.7 ICP		17.4			mg/L	0.2	0.5	10/25/04 19:52	wfg
Silver, dissolved	M200.8 ICP-MS			U		mg/L	5E-05	0.0003	11/13/04 8:10	scp
Sodium, dissolved	M200.7 ICP		41.0			mg/L	0.3	1	10/25/04 19:52	wfg
Strontium, dissolved	M200.7 ICP		1.58			mg/L	0.01	0.05	10/26/04 20:53	wfg
Thallium, dissolved	M200.8 ICP-MS			U		mg/L	0.0001	0.0005	11/13/04 8:10	scp
Uranium, total	M200.8 ICP-MS		0.01360			mg/L	5E-05	0.0003	10/30/04 8:00	scp
Vanadium, dissolved	M200.7 ICP			U		mg/L	0.005	0.03	10/25/04 19:52	wfg
Zinc, dissolved	M200.7 ICP		0.01	B		mg/L	0.01	0.05	10/25/04 19:52	wfg

Metals Prep

Parameter	EPA Method		Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								10/26/04 5:57	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV2-04-1

 ACZ Sample ID: L48197-11
 Date Sampled: 10/06/04 15:20
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		181			mg/L	2	10	10/15/04 0:00	njm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Total Alkalinity		181			mg/L	2	10	10/15/04 0:00	njm
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		181			mg/L	2	10	10/15/04 0:00	njm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Total Alkalinity		181			mg/L	2	10	10/15/04 0:00	njm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.2			%			11/17/04 0:00	calc
Sum of Anions		6.9			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		6.6			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	12			mg/L	1	5	10/21/04 16:29	ksj
Conductivity @25C	M120.1 - Meter	614			umhos/cm	1	10	10/15/04 16:25	njm
Fluoride	SM4500F-C	0.4	B		mg/L	0.1	0.5	10/28/04 14:38	mah
Hardness as CaCO ₃	SM2340B - Calculation	238			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 20:07	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:07	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	10/26/04 0:06	jjr
pH (lab)	M150.1 - Electrometric	7.7	H		units	0.1	0.1	10/15/04 16:25	njm
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	410			mg/L	10	20	10/13/04 15:38	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	900			mg/L	5	20	10/13/04 17:04	mah
Sulfate	M375.3 - Gravimetric	140			mg/L	10	50	10/22/04 13:18	ktd
TDS (calculated)	Calculation	403			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: SLV2-04-1
 Locator:

ACZ Sample ID: **L48197-11**
 Date Sampled: 10/06/04 15:20
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*

Radiochemistry

Parameter	EPA Method	Result	Error (+/-)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	19	6	3		pCi/L	10/20/04 16:23	dbs
Prep:	Method						10/18/04 13:30	dbs
Gross Beta	M9310	13.9 <i>FB</i>	4	4.7		pCi/L	10/20/04 16:23	dbs
Prep:	Method						10/18/04 13:30	dbs
Radium 226	M9315	0.74	0.2	0.4		pCi/L	10/18/04 17:33	dbs
Prep:	Method						10/13/04 11:00	dbs
Radium 228, total	M9320	1.11 <i>FB</i>	0.7	1.5		pCi/L	10/26/04 14:33	dbs
Prep:	Method						10/22/04 15:30	dbs
Thorium 228	ESM 4506	0.59	0.25	0.43		pCi/L	10/28/04 9:41	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	-0.93	0.54	1.1	*	pCi/L	10/28/04 9:41	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	-0.25	0.58	0.43		pCi/L	10/28/04 9:41	grb
Prep:	Method						10/26/04 10:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV3-04-1

 ACZ Sample ID: **L48197-07**
 Date Sampled: 10/04/04 13:40
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:34	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0004	0.002	11/14/04 15:52	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.001	0.005	11/13/04 7:43	scp
Barium, dissolved	M200.7 ICP	0.009	B		mg/L	0.003	0.01	10/25/04 19:34	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/13/04 7:43	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0006	B		mg/L	0.0002	0.001	11/13/04 7:43	scp
Calcium, dissolved	M200.7 ICP	303			mg/L	0.2	1	10/25/04 19:34	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0007	B FB		mg/L	0.0002	0.001	11/13/04 7:43	wfg
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:34	scp
Iron, dissolved	M200.7 ICP	1.86			mg/L	0.01	0.05	10/25/04 19:34	wfg
Lead, dissolved	M200.8 ICP-MS	0.0005	B		mg/L	0.0002	0.001	11/13/04 7:43	scp
Magnesium, dissolved	M200.7 ICP	95.4			mg/L	0.2	1	10/25/04 19:34	wfg
Manganese, dissolved	M200.7 ICP	0.545			mg/L	0.005	0.03	10/25/04 19:34	wfg
Mercury, dissolved	M245.1 CVAA	0.0003	B FB		mg/L	0.0002	0.001	10/29/04 13:06	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:34	wfg
Nickel, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 19:34	wfg
Potassium, dissolved	M200.7 ICP	14.1			mg/L	0.3	1	10/25/04 19:34	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:16	ak
Silica, dissolved	M200.7 ICP	8.8			mg/L	0.2	0.5	10/25/04 19:34	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:43	scp
Sodium, dissolved	M200.7 ICP	64.1			mg/L	0.3	1	10/25/04 19:34	wfg
Strontium, dissolved	M200.7 ICP	6.96		*	mg/L	0.01	0.05	10/26/04 20:35	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0008	B		mg/L	0.0002	0.001	11/13/04 7:43	scp
Uranium, total	M200.8 ICP-MS	0.0922			mg/L	0.0001	0.0005	10/30/04 7:30	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:34	wfg
Zinc, dissolved	M200.7 ICP	0.48			mg/L	0.01	0.05	10/25/04 19:34	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 6:55	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV3-04-1

 ACZ Sample ID: L48197-07
 Date Sampled: 10/04/04 13:40
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	POL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		399			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		399			mg/L	2	10	10/15/04 0:00	nim
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		399			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		399			mg/L	2	10	10/15/04 0:00	nim
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.0			%			11/17/04 0:00	calc
Sum of Anions		27.6			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		26.5			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	19			mg/L	1	5	10/21/04 16:22	ksj
Conductivity @25C	M120.1 - Meter	2080			umhos/cm	1	10	10/15/04 15:54	nim
Fluoride	SM4500F-C	0.4	B		mg/L	0.1	0.5	10/28/04 14:21	mah
Hardness as CaCO ₃	SM2340B - Calculation	1150			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 20:03	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:03	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate	0.25	B	*	mg/L	0.05	0.5	10/26/04 0:00	jjr
pH (lab)	M150.1 - Electrometric	7.3	H		units	0.1	0.1	10/15/04 15:54	nim
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1740	H	*	mg/L	10	20	10/13/04 15:35	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	12	BH	*	mg/L	5	20	10/23/04 11:26	jah
Sulfate	M375.3 - Gravimetric	910			mg/L	10	50	10/22/04 12:36	ktd
TDS (calculated)	Calculation	1660			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						11/17/04 0:00	calc

ACZ Laboratories, Inc.

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**RadioChemistry
Analytical Results****Summo Minerals Corporation**

Project ID: LISBON VALLEY
 Sample ID: SLV3-04-1
 Locator:

ACZ Sample ID: L48197-07
 Date Sampled: 10/04/04 13:40
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(%)	LLD	XQ	Units	Date	Analyst
Gross Alpha Prep:	M9310 Method	62.3	14	5.9		pCi/L	10/20/04 16:17 10/18/04 13:30	dbc dbc
Gross Beta Prep:	M9310 Method	40.7	8.4	8.5		pCi/L	10/20/04 16:17 10/18/04 13:30	dbc dbc
Radium 226 Prep:	M9315 Method	7.69	0.6	0.4		pCi/L	10/18/04 17:27 10/13/04 11:00	dbc dbc
Radium 228, total Prep:	M9320 Method	1.91 FB	0.7	1.4		pCi/L	10/19/04 12:20 10/15/04 15:00	dbc grb
Thorium 228 Prep:	ESM 4506 Method	0.33	0.26	0.19		pCi/L	10/28/04 9:35 10/26/04 10:00	grb grb
Thorium 230 Prep:	ESM 4506 Method	1.48 J FB	0.49	0.5	*	pCi/L	10/28/04 9:35 10/26/04 10:00	grb grb
Thorium 232 Prep:	ESM 4506 Method	0.13	0.3	0.19		pCi/L	10/28/04 9:35 10/26/04 10:00	grb grb

ACZ Laboratories, Inc.

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Inorganic Analytical Results

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: SLV3-04-D

ACZ Sample ID: L48197-08
Date Sampled: 10/04/04 13:40
Date Received: 10/08/04
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:38	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0004	0.002	11/14/04 15:57	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.001	0.005	11/13/04 7:50	scp
Barium, dissolved	M200.7 ICP	0.010	B		mg/L	0.003	0.01	10/25/04 19:38	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/13/04 7:50	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0006	B		mg/L	0.0002	0.001	11/13/04 7:50	scp
Calcium, dissolved	M200.7 ICP	301			mg/L	0.2	1	10/25/04 19:38	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0007	B FB		mg/L	0.0002	0.001	11/13/04 7:50	wfg
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:38	scp
Iron, dissolved	M200.7 ICP	1.85			mg/L	0.01	0.05	10/25/04 19:38	wfg
Lead, dissolved	M200.8 ICP-MS	0.0005	B		mg/L	0.0002	0.001	11/13/04 7:50	scp
Magnesium, dissolved	M200.7 ICP	94.8			mg/L	0.2	1	10/25/04 19:38	wfg
Manganese, dissolved	M200.7 ICP	0.547			mg/L	0.005	0.03	10/25/04 19:38	wfg
Mercury, dissolved	M245.1 CVAA	0.0003	B FB		mg/L	0.0002	0.001	10/29/04 13:07	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:38	wfg
Nickel, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 19:38	wfg
Potassium, dissolved	M200.7 ICP	14.1			mg/L	0.3	1	10/25/04 19:38	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:17	ak
Silica, dissolved	M200.7 ICP	8.7			mg/L	0.2	0.5	10/25/04 19:38	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:50	scp
Sodium, dissolved	M200.7 ICP	63.7			mg/L	0.3	1	10/25/04 19:38	wfg
Strontium, dissolved	M200.7 ICP	6.93		*	mg/L	0.01	0.05	10/26/04 20:39	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0009	B		mg/L	0.0002	0.001	11/13/04 7:50	scp
Uranium, total	M200.8 ICP-MS	0.0923			mg/L	0.0001	0.0005	10/30/04 7:35	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:38	wfg
Zinc, dissolved	M200.7 ICP	0.48			mg/L	0.01	0.05	10/25/04 19:38	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 6:40	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: SLV3-04-D

 ACZ Sample ID: L48197-08
 Date Sampled: 10/04/04 13:40
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		404			mg/L	2	10	10/15/04 0:00	njm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Total Alkalinity		404			mg/L	2	10	10/15/04 0:00	njm
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		404			mg/L	2	10	10/15/04 0:00	njm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	njm
Total Alkalinity		404			mg/L	2	10	10/15/04 0:00	njm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.9			%			11/17/04 0:00	calc
Sum of Anions		27.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		26.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	19			mg/L	1	5	10/21/04 16:24	ksj
Conductivity @25C	M120.1 - Meter	2040			umhos/cm	1	10	10/15/04 16:02	njm
Fluoride	SM4500F-C	0.4	B		mg/L	0.1	0.5	10/28/04 14:23	mah
Hardness as CaCO ₃	SM2340B - Calculation	1140			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 20:04	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:04	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate	0.17	B	*	mg/L	0.05	0.5	10/26/04 0:03	jjr
pH (lab)	M150.1 - Electrometric	7.2	H		units	0.1	0.1	10/15/04 16:02	njm
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1720	H	*	mg/L	10	20	10/13/04 15:35	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	10	BH	*	mg/L	5	20	10/23/04 11:28	jah
Sulfate	M375.3 - Gravimetric	890			mg/L	10	50	10/22/04 12:46	ktd
TDS (calculated)	Calculation	1640			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: SLV3-04-D
 Locator:

ACZ Sample ID: L48197-08
 Date Sampled: 10/04/04 13:40
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	QID	XQ	Units	Date	Analyst
Gross Alpha	M9310	73.2	16	6.1		pCi/L	10/20/04 16:18	dbb
Prep:	Method						10/18/04 13:30	dbb
Gross Beta	M9310	29.4	7.6	8.6		pCi/L	10/20/04 16:18	dbb
Prep:	Method						10/18/04 13:30	dbb
Radium 226	M9315	5.32	0.5	0.4		pCi/L	10/18/04 17:29	dbb
Prep:	Method						10/13/04 11:00	dbb
Radium 228, total	M9320	1.75 FB	0.7	1.4		pCi/L	10/19/04 12:22	dbb
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	-0.05	0.19	0.22		pCi/L	10/28/04 9:36	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	-0.42 FB	0.28	0.57	*	pCi/L	10/28/04 9:36	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	0.18	0.35	0.22		pCi/L	10/28/04 9:36	grb
Prep:	Method						10/26/04 10:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW2A-04-1

 ACZ Sample ID: **L48197-02**
 Date Sampled: 10/05/04 14:02
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U	*	mg/L	0.06	0.3	10/25/04 19:03	wfg
Antimony, dissolved	M200.8 ICP-MS		U	*	mg/L	0.0004	0.002	11/14/04 15:18	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.001	0.005	11/13/04 6:57	scp
Barium, dissolved	M200.7 ICP	0.010	B		mg/L	0.006	0.02	10/25/04 19:03	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/13/04 6:57	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/13/04 6:57	scp
Calcium, dissolved	M200.7 ICP	423			mg/L	0.4	2	10/25/04 19:03	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0007	B	F&B	mg/L	0.0002	0.001	11/13/04 6:57	scp
Copper, dissolved	M200.7 ICP	0.21			mg/L	0.02	0.1	10/25/04 19:03	wfg
Iron, dissolved	M200.7 ICP	0.51			mg/L	0.02	0.1	10/25/04 19:03	wfg
Lead, dissolved	M200.8 ICP-MS	0.0003	B		mg/L	0.0002	0.001	11/13/04 6:57	scp
Magnesium, dissolved	M200.7 ICP	126			mg/L	0.4	2	10/25/04 19:03	wfg
Manganese, dissolved	M200.7 ICP	1.03			mg/L	0.01	0.05	10/25/04 19:03	wfg
Mercury, dissolved	M245.1 CVAA		U		mg/L	0.0002	0.001	10/28/04 14:35	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.02	0.1	10/25/04 19:03	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.02	0.1	10/25/04 19:03	wfg
Potassium, dissolved	M200.7 ICP	14.9			mg/L	0.6	2	10/25/04 19:03	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:07	ak
Silica, dissolved	M200.7 ICP	9.2			mg/L	0.4	1	10/25/04 19:03	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 6:57	scp
Sodium, dissolved	M200.7 ICP	72.1			mg/L	0.6	2	10/25/04 19:03	wfg
Strontium, dissolved	M200.7 ICP	7.22		*	mg/L	0.02	0.1	10/26/04 20:13	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0004	B		mg/L	0.0002	0.001	11/13/04 6:57	scp
Uranium, total	M200.8 ICP-MS	0.3830			mg/L	0.0001	0.0005	10/30/04 6:55	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:03	wfg
Zinc, dissolved	M200.7 ICP	0.04	B		mg/L	0.02	0.1	10/25/04 19:03	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 8:36	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW2A-04-1

 ACZ Sample ID: L48197-02
 Date Sampled: 10/05/04 14:02
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		551	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		551	H	*	mg/L	2	10	10/21/04 0:00	mah
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		551	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		551	H	*	mg/L	2	10	10/21/04 0:00	mah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.0			%			11/17/04 0:00	calc
Sum of Anions		37.5			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		35.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	15			mg/L	1	5	10/21/04 16:15	ksj
Conductivity @25C	M120.1 - Meter	2390			umhos/cm	1	10	10/21/04 15:59	mah
Fluoride	SM4500F-C	0.3	B		mg/L	0.1	0.5	10/28/04 14:04	mah
Hardness as CaCO ₃	SM2340B - Calculation	1580			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 19:55	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 19:55	jjr
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	0.19	B		mg/L	0.05	0.5	10/25/04 23:53	jjr
	M150.1 - Electrometric	7.4	H		units	0.1	0.1	10/21/04 15:59	mah
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	2320	H	*	mg/L	10	20	10/13/04 15:31	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	52	H	*	mg/L	5	20	10/23/04 11:24	jah
Sulfate	M375.3 - Gravimetric	1240			mg/L	10	50	10/22/04 11:44	ktd
TDS (calculated)	Calculation	2240			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: MW2A-04-1
 Locator:

ACZ Sample ID: **L48197-02**
 Date Sampled: 10/05/04 14:02
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	R.D.	XQ	Units	Date	Analyst
Gross Alpha	M9310	280	39	9.8		pCi/L	11/01/04 0:04	dbs/grb
Prep:	Method						10/27/04 17:00	dbs
Gross Beta	M9310	126	15	14		pCi/L	11/01/04 0:04	dbs/grb
Prep:	Method						10/27/04 17:00	dbs
Radium 226	M9315	1.55	0.3	0.3		pCi/L	10/18/04 17:20	dbs
Prep:								
Radium 228, total	M9320	0.98 <i>FB</i>	0.8	1.6		pCi/L	10/19/04 12:13	dbs
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	-0.14	0.17	0.24		pCi/L	10/21/04 15:16	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 230	ESM 4506	0.87 <i>J FB</i>	0.5	0.62	*	pCi/L	10/21/04 15:16	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 232	ESM 4506	0.11	0.36	0.24		pCi/L	10/21/04 15:16	grb
Prep:	Method						10/19/04 9:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: 94MW2-04-1

 ACZ Sample ID: **L48197-09**
 Date Sampled: 10/04/04 15:25
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP			U	mg/L	0.03	0.2	10/25/04 19:43	wfg
Antimony, dissolved	M200.8 ICP-MS	0.0008	B		mg/L	0.0002	0.001	11/14/04 16:02	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0031			mg/L	0.0005	0.003	11/13/04 7:56	scp
Barium, dissolved	M200.7 ICP	0.015			mg/L	0.003	0.01	10/25/04 19:43	wfg
Beryllium, dissolved	M200.8 ICP-MS			U	mg/L	0.0001	0.0005	11/13/04 7:56	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0104			mg/L	0.0001	0.0005	11/13/04 7:56	scp
Calcium, dissolved	M200.7 ICP	95.3			mg/L	0.2	1	10/25/04 19:43	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0001	B FB		mg/L	0.0001	0.0005	11/13/04 7:56	scp
Copper, dissolved	M200.7 ICP			U	mg/L	0.01	0.05	10/25/04 19:43	wfg
Iron, dissolved	M200.7 ICP	0.16			mg/L	0.01	0.05	10/25/04 19:43	wfg
Lead, dissolved	M200.8 ICP-MS			U	mg/L	0.0001	0.0005	11/13/04 7:56	scp
Magnesium, dissolved	M200.7 ICP	34.4			mg/L	0.2	1	10/25/04 19:43	wfg
Manganese, dissolved	M200.7 ICP	0.181			mg/L	0.005	0.03	10/25/04 19:43	wfg
Mercury, dissolved	M245.1 CVAA	0.0003	B FB		mg/L	0.0002	0.001	10/29/04 13:08	jjc
Molybdenum, dissolved	M200.7 ICP			U	mg/L	0.01	0.05	10/25/04 19:43	wfg
Nickel, dissolved	M200.7 ICP			U	mg/L	0.01	0.05	10/25/04 19:43	wfg
Potassium, dissolved	M200.7 ICP	8.9			mg/L	0.3	1	10/25/04 19:43	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride			U	mg/L	0.001	0.005	10/28/04 19:18	ak
Silica, dissolved	M200.7 ICP	12.7			mg/L	0.2	0.5	10/25/04 19:43	wfg
Silver, dissolved	M200.8 ICP-MS			U	mg/L	5E-05	0.0003	11/13/04 7:56	scp
Sodium, dissolved	M200.7 ICP	76.4			mg/L	0.3	1	10/25/04 19:43	wfg
Strontium, dissolved	M200.7 ICP	2.39		*	mg/L	0.01	0.05	10/26/04 20:44	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0004	B		mg/L	0.0001	0.0005	11/13/04 7:56	scp
Uranium, total	M200.8 ICP-MS	0.02870			mg/L	5E-05	0.0003	10/30/04 7:50	scp
Vanadium, dissolved	M200.7 ICP			U	mg/L	0.005	0.03	10/25/04 19:43	wfg
Zinc, dissolved	M200.7 ICP	0.03	B		mg/L	0.01	0.05	10/25/04 19:43	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 6:26	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: 94MW2-04-1

 ACZ Sample ID: L48197-09
 Date Sampled: 10/04/04 15:25
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XO	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		174			mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity		174			mg/L	2	10	10/15/04 0:00	nlm
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		174			mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity		174			mg/L	2	10	10/15/04 0:00	nlm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.2			%			11/17/04 0:00	calc
Sum of Anions		11.8			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		11.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	26			mg/L	1	5	10/21/04 16:25	ksj
Conductivity @25C	M120.1 - Meter	1030			umhos/cm	1	10	10/15/04 16:09	nlm
Fluoride	SM4500F-C	0.4	B		mg/L	0.1	0.5	10/28/04 14:33	mah
Hardness as CaCO ₃	SM2340B - Calculation	380			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 20:05	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:05	jjr
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	10/26/04 0:04	jjr
Residue, Filterable (TDS) @180C	M150.1 - Electrometric	6.7	H		units	0.1	0.1	10/15/04 16:09	nlm
Residue, Non-Filterable (TSS) @105C	M160.1 - Gravimetric	700	H	*	mg/L	10	20	10/13/04 15:36	mah/ktd
Sulfate	M375.3 - Gravimetric	360			mg/L	10	50	10/22/04 12:57	ktd
TDS (calculated)	Calculation	721			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: 94MW2-04-1
 Locator:

ACZ Sample ID: L48197-09
 Date Sampled: 10/04/04 15:25
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(%)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	70.5	16	6.1		pCi/L	10/20/04 16:20	dbs
Prep:	Method						10/18/04 13:30	dbs
Gross Beta	M9310	33.5	8.3	8.7		pCi/L	10/20/04 16:20	dbs
Prep:	Method						10/18/04 13:30	dbs
Radium 226	M9315	4.85	0.5	0.4		pCi/L	10/18/04 17:30	dbs
Prep:	Method						10/13/04 11:00	dbs
Radium 228, total	M9320	2.04 FB	0.8	1.6		pCi/L	10/26/04 14:31	dbs
Prep:	Method						10/22/04 15:30	dbs
Thorium 228	ESM 4506	0.32	0.22	0.57		pCi/L	10/28/04 9:38	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	0.4	0.98	1.5	*	pCi/L	10/28/04 9:38	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	0.71	0.94	0.57		pCi/L	10/28/04 9:38	grb
Prep:	Method						10/26/04 10:00	grb

ACZ Laboratories, Inc.

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Inorganic Analytical Results

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW96-7A-04-1

ACZ Sample ID: L48197-14
Date Sampled: 10/06/04 09:27
Date Received: 10/08/04
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 20:23	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/14/04 16:37	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0028	B		mg/L	0.0005	0.003	11/13/04 8:43	scp
Barium, dissolved	M200.7 ICP	0.010	B		mg/L	0.003	0.01	10/25/04 20:23	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:43	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:43	scp
Calcium, dissolved	M200.7 ICP	209			mg/L	0.2	1	10/25/04 20:23	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0001	B	F8	mg/L	0.0001	0.0005	11/13/04 8:43	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 20:23	wfg
Iron, dissolved	M200.7 ICP	1.89			mg/L	0.01	0.05	10/25/04 20:23	wfg
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:43	scp
Magnesium, dissolved	M200.7 ICP	73.0			mg/L	0.2	1	10/25/04 20:23	wfg
Manganese, dissolved	M200.7 ICP	0.247			mg/L	0.005	0.03	10/25/04 20:23	wfg
Mercury, dissolved	M245.1 CVAA	0.0002	B	F8	mg/L	0.0002	0.001	10/29/04 13:17	jjc
Molybdenum, dissolved	M200.7 ICP	0.02	B		mg/L	0.01	0.05	10/25/04 20:23	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 20:23	wfg
Potassium, dissolved	M200.7 ICP	11.8			mg/L	0.3	1	10/25/04 20:23	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U		mg/L	0.001	0.005	10/28/04 19:29	ak
Silica, dissolved	M200.7 ICP	9.5			mg/L	0.2	0.5	10/25/04 20:23	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 8:43	scp
Sodium, dissolved	M200.7 ICP	58.6			mg/L	0.3	1	10/25/04 20:23	wfg
Strontium, dissolved	M200.7 ICP	5.99			mg/L	0.01	0.05	10/26/04 21:24	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:43	scp
Uranium, total	M200.8 ICP-MS	0.01030			mg/L	5E-05	0.0003	10/30/04 8:15	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 20:23	wfg
Zinc, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 20:23	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 5:14	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW96-7A-04-1

 ACZ Sample ID: L48197-14
 Date Sampled: 10/06/04 09:27
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration	352			mg/L	2	10	10/15/04 0:00	nlm
Bicarbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃		352			mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity					mg/L	2	10	10/15/04 0:00	nlm
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration	352			mg/L	2	10	10/15/04 0:00	nlm
Bicarbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃		352			mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity					mg/L	2	10	10/15/04 0:00	nlm
Cation-Anion Balance	Calculation	-1.8			%			11/17/04 0:00	calc
Cation-Anion Balance		20.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Anions		19.6			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		17			mg/L	1	5	10/21/04 16:32	ksj
Chloride	M325.2 - Colorimetric	1660			umhos/cm	1	10	10/15/04 16:49	nlm
Conductivity @25C	M120.1 - Meter	0.4	B		mg/L	0.1	0.5	10/28/04 14:50	mah
Fluoride	SM4500F-C	823			mg/L	1	7	11/17/04 0:00	calc
Hardness as CaCO ₃	SM2340B - Calculation		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂		UH	*	mg/L	0.02	0.1	10/11/04 20:10	jjr
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:10	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.24	B	*	mg/L	0.05	0.5	10/26/04 0:10	jjr
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	7.2	H		units	0.1	0.1	10/15/04 16:49	nlm
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	660			mg/L	10	20	10/13/04 15:40	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	12	B		mg/L	5	20	10/13/04 17:05	mah
Sulfate	M375.3 - Gravimetric	610			mg/L	10	50	10/22/04 13:59	ktd
TDS (calculated)	Calculation	1210			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.55						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW96-7A-04-1
Locator:

ACZ Sample ID: L48197-14
Date Sampled: 10/06/04 9:27
Date Received: 10/08/04
Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(+/−)	L.D	XQ	Units	Date	Analyst
Gross Alpha	M9310	15.7	7.8	4.8		pCi/L	10/20/04 16:27	dbb
Prep:	Method						10/18/04 13:30	dbb
Gross Beta	M9310	14.7 FB	6	7		pCi/L	10/20/04 16:27	dbb
Prep:	Method						10/18/04 13:30	dbb
Radium 226	M9315	2.76	0.3	0.3		pCi/L	10/25/04 10:30	dbb
Prep:	Method						10/20/04 13:30	dbb
Radium 228, total	M9320	2.82 FB	0.9	1.7		pCi/L	10/26/04 14:38	dbb
Prep:	Method						10/22/04 15:30	dbb
Thorium 228	ESM 4506	0.22	0.21	0.97		pCi/L	10/28/04 9:45	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	0.79	1.7	2.5	*	pCi/L	10/28/04 9:45	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	-0.77	1.2	0.97		pCi/L	10/28/04 9:45	grb
Prep:	Method						10/26/04 10:00	grb

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Inorganic Analytical Results

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW96-7B-04-1

ACZ Sample ID: L48197-03
Date Sampled: 10/06/04 13:46
Date Received: 10/08/04
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:07	wfg
Antimony, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0002	0.001	11/14/04 15:23	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0436			mg/L	0.0005	0.003	11/13/04 7:03	scp
Barium, dissolved	M200.7 ICP	0.056			mg/L	0.003	0.01	10/25/04 19:07	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:03	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:03	scp
Calcium, dissolved	M200.7 ICP	7.5			mg/L	0.2	1	10/25/04 19:07	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0002	B	PB	mg/L	0.0001	0.0005	11/13/04 7:03	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:07	wfg
Iron, dissolved	M200.7 ICP	0.03	B		mg/L	0.01	0.05	10/25/04 19:07	wfg
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:03	scp
Magnesium, dissolved	M200.7 ICP	11.8			mg/L	0.2	1	10/25/04 19:07	wfg
Manganese, dissolved	M200.7 ICP	0.023	B		mg/L	0.005	0.03	10/25/04 19:07	wfg
Mercury, dissolved	M245.1 CVAA		U		mg/L	0.0002	0.001	10/28/04 14:36	jjc
Molybdenum, dissolved	M200.7 ICP	0.02	B		mg/L	0.01	0.05	10/25/04 19:07	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:07	wfg
Potassium, dissolved	M200.7 ICP	7.6			mg/L	0.3	1	10/25/04 19:07	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:08	ak
Silica, dissolved	M200.7 ICP	9.3			mg/L	0.2	0.5	10/25/04 19:07	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 7:03	scp
Sodium, dissolved	M200.7 ICP	135			mg/L	0.3	1	10/25/04 19:07	wfg
Strontium, dissolved	M200.7 ICP	1.68		*	mg/L	0.01	0.05	10/26/04 20:17	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:03	scp
Uranium, total	M200.8 ICP-MS	0.00016	B		mg/L	5E-05	0.0003	10/30/04 7:00	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:07	wfg
Zinc, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:07	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 8:21	scp

ACZ Laboratories, Inc.

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Inorganic Analytical Results

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW96-7B-04-1

ACZ Sample ID: L48197-03
Date Sampled: 10/06/04 13:46
Date Received: 10/08/04
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		195	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃		26	H		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		220	H	*	mg/L	2	10	10/21/04 0:00	mah
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		195	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃		26	H		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		220	H	*	mg/L	2	10	10/21/04 0:00	mah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.3			%			12/06/04 0:00	calc
Sum of Anions		7.7			meq/L	0.1	0.5	12/06/04 0:00	calc
Sum of Cations		7.5			meq/L	0.1	0.5	12/06/04 0:00	calc
Chloride	M325.2 - Colorimetric	11			mg/L	1	5	10/21/04 16:17	ksj
Conductivity @25C	M120.1 - Meter	631			umhos/cm	1	10	10/21/04 16:15	mah
Fluoride	SM4500F-C	0.5			mg/L	0.1	0.5	10/28/04 14:06	mah
Hardness as CaCO ₃	SM2340B - Calculation	67			mg/L	1	7	12/06/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂	0.03	B		mg/L	0.02	0.1	12/06/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	BH	*	mg/L	0.02	0.1	10/11/04 19:56	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 19:56	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate	0.18	B		mg/L	0.05	0.5	10/25/04 23:54	jjr
pH (lab)	M150.1 - Electrometric	8.6	H		units	0.1	0.1	10/21/04 16:15	mah
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	470			mg/L	10	20	10/13/04 15:32	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	204			mg/L	5	20	10/13/04 17:03	mah
Sulfate	M375.3 - Gravimetric	140			mg/L	10	50	10/22/04 11:54	ktd
TDS (calculated)	Calculation	468			mg/L	10	50	12/06/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.00						12/06/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW96-7B-04-~~FB~~
Locator: -1

ACZ Sample ID: L48197-03
Date Sampled: 10/06/04 13:05
Date Received: 10/08/04
Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	5.24	4.7	3.5		pCi/L	10/20/04 16:11	dbc
Prep:	Method						10/18/04 13:30	dbc
Gross Beta	M9310	12.2 <i>FB</i>	4.2	5		pCi/L	10/20/04 16:11	dbc
Prep:	Method						10/18/04 13:30	dbc
Radium 226	M9315	0.35	0.2	0.4		pCi/L	10/18/04 17:21	dbc
Prep:	Method						10/13/04 11:00	dbc
Radium 228, total	M9320	0.7 <i>FB</i>	0.7	1.6		pCi/L	10/19/04 12:15	dbc
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	0.05	0.21	0.24		pCi/L	10/21/04 15:18	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 230	ESM 4506	0.41	0.44	0.61	*	pCi/L	10/21/04 15:18	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 232	ESM 4506	0.08	0.35	0.24		pCi/L	10/21/04 15:18	grb
Prep:	Method						10/19/04 9:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-9-04-1

 ACZ Sample ID: **L48197-10**
 Date Sampled: 10/07/04 10:15
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:47	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/14/04 16:07	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.0005	0.003	11/13/04 8:03	scp
Barium, dissolved	M200.7 ICP	0.079			mg/L	0.003	0.01	10/25/04 19:47	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:03	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0001	B		mg/L	0.0001	0.0005	11/13/04 8:03	scp
Calcium, dissolved	M200.7 ICP	28.7			mg/L	0.2	1	10/25/04 19:47	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0006	F/B		mg/L	0.0001	0.0005	11/13/04 8:03	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:47	wfg
Iron, dissolved	M200.7 ICP	0.34			mg/L	0.01	0.05	10/25/04 19:47	wfg
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:03	scp
Magnesium, dissolved	M200.7 ICP	14.7			mg/L	0.2	1	10/25/04 19:47	wfg
Manganese, dissolved	M200.7 ICP	0.080			mg/L	0.005	0.03	10/25/04 19:47	wfg
Mercury, dissolved	M245.1 CVAA	0.0003	B F/B		mg/L	0.0002	0.001	10/29/04 13:09	jc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:47	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:47	wfg
Potassium, dissolved	M200.7 ICP	5.9			mg/L	0.3	1	10/25/04 19:47	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U		mg/L	0.001	0.005	10/28/04 19:22	ak
Silica, dissolved	M200.7 ICP	13.0			mg/L	0.2	0.5	10/25/04 19:47	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 8:03	scp
Sodium, dissolved	M200.7 ICP	81.8			mg/L	0.3	1	10/25/04 19:47	wfg
Strontium, dissolved	M200.7 ICP	1.62	*		mg/L	0.01	0.05	10/26/04 20:48	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:03	scp
Uranium, total	M200.8 ICP-MS	0.00030			mg/L	5E-05	0.0003	10/30/04 7:55	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:47	wfg
Zinc, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:47	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 6:12	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-9-04-1

 ACZ Sample ID: L48197-10
 Date Sampled: 10/07/04 10:15
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XG	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		231			mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity		231			mg/L	2	10	10/15/04 0:00	nlm
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		231			mg/L	2	10	10/15/04 0:00	nlm
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Hydroxide as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	nlm
Total Alkalinity		231			mg/L	2	10	10/15/04 0:00	nlm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.8			%			11/17/04 0:00	calc
Sum of Anions		6.3			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	7			mg/L	1	5	10/21/04 16:26	ksj
Conductivity @25C	M120.1 - Meter	551			umhos/cm	1	10	10/15/04 16:17	nlm
Fluoride	SM4500F-C	0.7			mg/L	0.1	0.5	10/28/04 14:35	mah
Hardness as CaCO ₃	SM2340B - Calculation	132			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂	0.05	B		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.05	BH	*	mg/L	0.02	0.1	10/11/04 20:06	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	10/09/04 2:12	erf
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	0.14	B	*	mg/L	0.05	0.5	10/26/04 0:05	jjr
	M150.1 - Electrometric	7.4	H		units	0.1	0.1	10/15/04 16:17	nlm
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	360			mg/L	10	20	10/13/04 15:37	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	38	H	*	mg/L	5	20	10/23/04 11:29	jah
Sulfate	M375.3 - Gravimetric	70			mg/L	10	50	10/22/04 13:07	ktd
TDS (calculated)	Calculation	363			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.99						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: MW97-9-04-1
 Locator:

ACZ Sample ID: L48197-10
 Date Sampled: 10/07/04 10:15
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(%)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	0.0	3	2.8		pCi/L	10/20/04 16:21	dbb
Prep:	Method						10/18/04 13:30	dbb
Gross Beta	M9310	8.24 FB	3.7	4.3		pCi/L	10/20/04 16:21	dbb
Prep:	Method						10/18/04 13:30	dbb
Radium 226	M9315	0.57	0.2	0.4		pCi/L	10/18/04 17:31	dbb
Prep:	Method						10/13/04 11:00	dbb
Radium 228, total	M9320	1.55 FB	0.7	1.5		pCi/L	10/26/04 14:32	dbb
Prep:	Method						10/22/04 15:30	dbb
Thorium 228	ESM 4506	0.03	0.2	0.24		pCi/L	10/28/04 9:39	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	0.52 FB	0.46	0.62	*	pCi/L	10/28/04 9:39	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	0.46 FB	0.42	0.24		pCi/L	10/28/04 9:39	grb
Prep:	Method						10/26/04 10:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-11-04-1

 ACZ Sample ID: **L48197-12**
 Date Sampled: 10/06/04 16:10
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 20:05	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/14/04 16:27	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0034			mg/L	0.0005	0.003	11/13/04 8:30	scp
Barium, dissolved	M200.7 ICP	0.059			mg/L	0.003	0.01	10/25/04 20:05	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:30	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:30	scp
Calcium, dissolved	M200.7 ICP	63.1			mg/L	0.2	1	10/25/04 20:05	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0001	B	F&B	mg/L	0.0001	0.0005	11/13/04 8:30	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 20:05	wfg
Iron, dissolved	M200.7 ICP	0.73			mg/L	0.01	0.05	10/25/04 20:05	wfg
Lead, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	11/13/04 8:30	scp
Magnesium, dissolved	M200.7 ICP	21.3			mg/L	0.2	1	10/25/04 20:05	wfg
Manganese, dissolved	M200.7 ICP	0.421			mg/L	0.005	0.03	10/25/04 20:05	wfg
Mercury, dissolved	M245.1 CVAA		U		mg/L	0.0002	0.001	10/29/04 13:14	jjc
Molybdenum, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 20:05	wfg
Nickel, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 20:05	wfg
Potassium, dissolved	M200.7 ICP	6.3			mg/L	0.3	1	10/25/04 20:05	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U		mg/L	0.001	0.005	10/28/04 19:24	ak
Silica, dissolved	M200.7 ICP	16.6			mg/L	0.2	0.5	10/25/04 20:05	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 8:30	scp
Sodium, dissolved	M200.7 ICP	157			mg/L	0.3	1	10/25/04 20:05	wfg
Strontium, dissolved	M200.7 ICP	2.20			mg/L	0.01	0.05	10/26/04 21:15	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 8:30	scp
Uranium, total	M200.8 ICP-MS	0.01070			mg/L	5E-05	0.0003	10/30/04 8:05	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 20:05	wfg
Zinc, dissolved	M200.7 ICP	1.94			mg/L	0.01	0.05	10/25/04 20:05	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 5:43	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-11-04-1

 ACZ Sample ID: L48197-12
 Date Sampled: 10/06/04 16:10
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration	290			mg/L	2	10	10/15/04 0:00	n/m
Bicarbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	n/m
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	n/m
Hydroxide as CaCO ₃		290			mg/L	2	10	10/15/04 0:00	n/m
Total Alkalinity					mg/L	2	10	10/15/04 0:00	n/m
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration	290			mg/L	2	10	10/15/04 0:00	n/m
Bicarbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	n/m
Carbonate as CaCO ₃			U		mg/L	2	10	10/15/04 0:00	n/m
Hydroxide as CaCO ₃		290			mg/L	2	10	10/15/04 0:00	n/m
Total Alkalinity					mg/L	2	10	10/15/04 0:00	n/m
Cation-Anion Balance	Calculation	-2.0			%			11/17/04 0:00	calc
Cation-Anion Balance		12.7			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Anions		12.2			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations					mg/L	2	10	10/21/04 16:56	ksj
Chloride	M325.2 - Colorimetric	124			umhos/cm	1	10	10/15/04 16:32	n/m
Conductivity @25C	M120.1 - Meter	1150			mg/L	0.1	0.5	10/28/04 14:40	mah
Fluoride	SM4500F-C	0.6			mg/L	0.1	0.5		
Hardness as CaCO ₃	SM2340B - Calculation	245			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 20:08	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 20:08	jjr
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	0.07	B	*	mg/L	0.05	0.5	10/26/04 0:08	jjr
	M150.1 - Electrometric	7.5	H		units	0.1	0.1	10/15/04 16:32	n/m
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	710			mg/L	10	20	10/13/04 15:39	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	62			mg/L	5	20	10/13/04 17:05	mah
Sulfate	M375.3 - Gravimetric	160			mg/L	10	50	10/22/04 13:39	ktd
TDS (calculated)	Calculation	728			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW97-11-04-1
Locator:

ACZ Sample ID: L48197-12
Date Sampled: 10/06/04 16:10
Date Received: 10/08/04
Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	LLD	XQ	Units	Date	Analyst
Gross Alpha Prep:	M9310 Method	15.1	5.9	3.5		pCi/L	10/20/04 16:24 10/18/04 13:30	dbc dbc
Gross Beta Prep:	M9310 Method	15.2 <i>fβ</i>	4.2	5		pCi/L	10/20/04 16:24 10/18/04 13:30	dbc dbc
Radium 226 Prep:	M9315 Method	0.76	0.4	0.8		pCi/L	10/18/04 17:34 10/13/04 11:00	dbc dbc
Radium 228, total Prep:	M9320 Method	1.79 <i>fβ</i>	0.7	1.4		pCi/L	10/26/04 14:35 10/22/04 15:30	dbc dbc
Thorium 228 Prep:	ESM 4506 Method	-0.29	0.16	0.31		pCi/L	10/28/04 9:42 10/26/04 10:00	grb grb
Thorium 230 Prep:	ESM 4506 Method	0.29	0.55	0.82	*	pCi/L	10/28/04 9:42 10/26/04 10:00	grb grb
Thorium 232 Prep:	ESM 4506 Method	0.18	0.48	0.31		pCi/L	10/28/04 9:42 10/26/04 10:00	grb grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-12-04-1

 ACZ Sample ID: **L48197-05**
 Date Sampled: 10/05/04 16:36
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:25	wfg
Antimony, dissolved	M200.8 ICP-MS	0.0003	B		mg/L	0.0002	0.001	11/14/04 15:33	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0012	B		mg/L	0.0005	0.003	11/13/04 7:16	scp
Barium, dissolved	M200.7 ICP	0.036			mg/L	0.003	0.01	10/25/04 19:25	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:16	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:16	scp
Calcium, dissolved	M200.7 ICP	47.2			mg/L	0.2	1	10/25/04 19:25	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0040			mg/L	0.0001	0.0005	11/13/04 7:16	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:25	wfg
Iron, dissolved	M200.7 ICP	0.09			mg/L	0.01	0.05	10/25/04 19:25	wfg
Lead, dissolved	M200.8 ICP-MS	0.0001	B		mg/L	0.0001	0.0005	11/13/04 7:16	scp
Magnesium, dissolved	M200.7 ICP	22.5			mg/L	0.2	1	10/25/04 19:25	wfg
Manganese, dissolved	M200.7 ICP	0.088			mg/L	0.005	0.03	10/25/04 19:25	wfg
Mercury, dissolved	M245.1 CVAA	0.0002	B FB		mg/L	0.0002	0.001	10/29/04 13:01	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:25	wfg
Nickel, dissolved	M200.7 ICP	0.02	B		mg/L	0.01	0.05	10/25/04 19:25	wfg
Potassium, dissolved	M200.7 ICP	6.5			mg/L	0.3	1	10/25/04 19:25	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:13	ak
Silica, dissolved	M200.7 ICP	14.3			mg/L	0.2	0.5	10/25/04 19:25	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 7:16	scp
Sodium, dissolved	M200.7 ICP	116			mg/L	0.3	1	10/25/04 19:25	wfg
Strontium, dissolved	M200.7 ICP	3.57		*	mg/L	0.01	0.05	10/26/04 20:26	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:16	scp
Uranium, total	M200.8 ICP-MS	0.05070			mg/L	5E-05	0.0003	10/30/04 7:10	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:25	wfg
Zinc, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 19:25	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 7:52	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-12-04-1

 ACZ Sample ID: L48197-05
 Date Sampled: 10/05/04 16:36
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		317	H		mg/L	2	10	12/04/04 0:00	jah
Carbonate as CaCO ₃				UH	mg/L	2	10	12/04/04 0:00	jah
Hydroxide as CaCO ₃				UH	mg/L	2	10	12/04/04 0:00	jah
Total Alkalinity		317	H	*	mg/L	2	10	12/04/04 0:00	jah
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		317	H		mg/L	2	10	12/04/04 0:00	jah
Carbonate as CaCO ₃				UH	mg/L	2	10	12/04/04 0:00	jah
Hydroxide as CaCO ₃				UH	mg/L	2	10	12/04/04 0:00	jah
Total Alkalinity		317	H	*	mg/L	2	10	12/04/04 0:00	jah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.1			%			12/06/04 0:00	calc
Sum of Anions		9.9			meq/L	0.1	0.5	12/06/04 0:00	calc
Sum of Cations		9.5			meq/L	0.1	0.5	12/06/04 0:00	calc
Chloride	M325.2 - Colorimetric	16			mg/L	1	5	10/21/04 16:19	ksj
Conductivity @25C	M120.1 - Meter	764	H	*	umhos/cm	1	10	12/04/04 12:52	jah
Fluoride	SM4500F-C	0.5	B		mg/L	0.1	0.5	10/28/04 14:11	mah
Hardness as CaCO ₃	SM2340B - Calculation	210			mg/L	1	7	12/06/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂	0.08	B		mg/L	0.02	0.1	12/06/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.08	BH	*	mg/L	0.02	0.1	10/11/04 19:58	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction			UH	*	mg/L	0.01	0.05	10/11/04 19:58
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	0.08	B		mg/L	0.05	0.5	10/25/04 23:58	jjr
Residue, Filterable (TDS) @180C	M150.1 - Electrometric	7.9	H		units	0.1	0.1	12/04/04 12:52	jah
Residue, Non-Filterable (TSS) @105C	M160.1 - Gravimetric	550	H	*	mg/L	10	20	10/13/04 15:33	mah/ktd
Sulfate	M375.3 - Gravimetric	150			mg/L	10	50	10/22/04 12:15	ktd
TDS (calculated)	Calculation	567			mg/L	10	50	12/06/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						12/06/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY
 Sample ID: MW97-12-04-1
 Locator:

ACZ Sample ID: L48197-05
 Date Sampled: 10/05/04 16:36
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	144	25	7.7		pCi/L	10/20/04 16:14	dbc
Prep:	Method						10/18/04 13:30	dbc
Gross Beta	M9310	134	14	11		pCi/L	10/20/04 16:14	dbc
Prep:	Method						10/18/04 13:30	dbc
Radium 226	M9315	7.9	0.7	0.5		pCi/L	10/18/04 17:24	dbc
Prep:	Method						10/13/04 11:00	dbc
Radium 228, total	M9320	2.23 FB	0.8	1.5		pCi/L	10/19/04 12:17	dbc
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	-0.06	0.19	0.27		pCi/L	10/21/04 15:21	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 230	ESM 4506	1.09 JFB	0.59	0.71	*	pCi/L	10/21/04 15:21	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 232	ESM 4506	1.12 FB	0.55	0.27		pCi/L	10/21/04 15:21	grb
Prep:	Method						10/19/04 9:00	grb

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487(800) 334-5493

Inorganic Analytical Results

Summo Minerals Corporation

Project ID: LISBON VALLEY
Sample ID: MW97-13-04-01

ACZ Sample ID: L48197-01
Date Sampled: 10/05/04 12:35
Date Received: 10/08/04
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 18:49	wfg
Antimony, dissolved	M200.8 ICP-MS	0.0006	B		mg/L	0.0002	0.001	11/14/04 15:03	scp
Arsenic, dissolved	M200.8 ICP-MS	0.0205			mg/L	0.0005	0.003	11/13/04 6:37	scp
Barium, dissolved	M200.7 ICP	0.085			mg/L	0.003	0.01	10/25/04 18:49	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 6:37	scp
Cadmium, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	11/13/04 6:37	scp
Calcium, dissolved	M200.7 ICP	74.3			mg/L	0.2	1	10/25/04 18:49	scp
Chromium, dissolved	M200.8 ICP-MS	0.0002	B FB		mg/L	0.0001	0.0005	11/13/04 6:37	wfg
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 18:49	scp
Iron, dissolved	M200.7 ICP	0.11			mg/L	0.01	0.05	10/25/04 18:49	wfg
Lead, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	11/13/04 6:37	wfg
Magnesium, dissolved	M200.7 ICP	27.5			mg/L	0.2	1	10/25/04 18:49	wfg
Manganese, dissolved	M200.7 ICP	0.166			mg/L	0.005	0.03	10/25/04 18:49	wfg
Mercury, dissolved	M245.1 CVAA		U		mg/L	0.0002	0.001	10/28/04 14:33	jjc
Molybdenum, dissolved	M200.7 ICP	0.11			mg/L	0.01	0.05	10/25/04 18:49	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 18:49	wfg
Potassium, dissolved	M200.7 ICP	8.5			mg/L	0.01	0.05	10/25/04 18:49	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.3	1	10/25/04 18:49	wfg
Silica, dissolved	M200.7 ICP	14.2			mg/L	0.2	0.5	10/25/04 18:49	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 6:37	scp
Sodium, dissolved	M200.7 ICP	118			mg/L	0.3	1	10/25/04 18:49	wfg
Strontium, dissolved	M200.7 ICP	3.09		*	mg/L	0.01	0.05	10/26/04 19:50	wfg
Thallium, dissolved	M200.8 ICP-MS	0.0001	B		mg/L	0.0001	0.0005	11/13/04 6:37	scp
Uranium, total	M200.8 ICP-MS	0.00434			mg/L	5E-05	0.0003	10/30/04 6:50	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 18:49	wfg
Zinc, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 18:49	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 8:50	scp

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-13-04-01

 ACZ Sample ID: L48197-01
 Date Sampled: 10/05/04 12:35
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		260	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		260	H	*	mg/L	2	10	10/21/04 0:00	mah
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		260	H		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃			UH		mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		260	H	*	mg/L	2	10	10/21/04 0:00	mah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.4			%			11/17/04 0:00	calc
Sum of Anions		11.6			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		11.5			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric	41			mg/L	1	5	10/21/04 16:14	ksj
Conductivity @25C	M120.1 - Meter	896			umhos/cm	1	10	10/21/04 15:50	mah
Fluoride	SM4500F-C	0.6			mg/L	0.1	0.5	10/28/04 14:01	mah
Hardness as CaCO ₃	SM2340B - Calculation	299			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 19:54	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 19:54	jjr
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate	0.09	B		mg/L	0.05	0.5	10/25/04 23:52	jjr
	M150.1 - Electrometric	7.8	H		units	0.1	0.1	10/21/04 15:50	mah
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	680	H	*	mg/L	10	20	10/13/04 15:31	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	44	H	*	mg/L	5	20	10/23/04 11:22	jah
Sulfate	M375.3 - Gravimetric	250			mg/L	10	50	10/22/04 11:33	ktd
TDS (calculated)	Calculation	694			mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						11/17/04 0:00	calc

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**RadioChemistry
Analytical Results****Summo Minerals Corporation**

Project ID: LISBON VALLEY
 Sample ID: MW97-13-04-01
 Locator:

ACZ Sample ID: **L48197-01**
 Date Sampled: 10/05/04 12:35
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*

Radiochemistry

Parameter	EPA Method	Result	Error(+/-)	LLD	XQ	Units	Date	Analyst
Gross Alpha Prep:	M9310 Method	7.17	4.8	3		pCi/L	10/20/04 16:08 10/18/04 13:30	dbs dbs
Gross Beta Prep:	M9310 Method	15.6 <i>FB</i>	4.3	4.7		pCi/L	10/20/04 16:08 10/18/04 13:30	dbs dbs
Radium 226 Prep:	M9315 Method	1.7	0.3	0.4		pCi/L	10/18/04 17:18 10/13/04 11:00	dbs dbs
Radium 228, total Prep:	M9320 Method	1.89 <i>FB</i>	0.8	1.5		pCi/L	10/19/04 12:12 10/15/04 15:00	dbs grb
Thorium 228 Prep:	ESM 4506 Method	-0.09	0.18	0.25		pCi/L	10/21/04 15:15 10/19/04 9:00	grb grb
Thorium 230 Prep:	ESM 4506 Method	0.65 <i>FB</i>	0.51	0.67	*	pCi/L	10/21/04 15:15 10/19/04 9:00	grb grb
Thorium 232 Prep:	ESM 4506 Method	0.2	0.4	0.25		pCi/L	10/21/04 15:15 10/19/04 9:00	grb grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW96-7B-04-FB *Field Blank*

 ACZ Sample ID: L48197-04
 Date Sampled: 10/06/04 13:05
 Date Received: 10/08/04
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:12	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/14/04 15:28	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.0005	0.003	11/13/04 7:10	scp
Barium, dissolved	M200.7 ICP		U		mg/L	0.003	0.01	10/25/04 19:12	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:10	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:10	scp
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	10/25/04 19:12	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	11/13/04 7:10	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:12	wfg
Iron, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:12	wfg
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:10	scp
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	10/25/04 19:12	wfg
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:12	wfg
Mercury, dissolved	M245.1 CVAA		U		mg/L	0.0002	0.001	10/28/04 14:37	jic
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:12	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:12	wfg
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	1	10/25/04 19:12	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:09	ak
Silica, dissolved	M200.7 ICP		U		mg/L	0.2	0.5	10/25/04 19:12	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 7:10	scp
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	1	10/25/04 19:12	wfg
Strontium, dissolved	M200.7 ICP		U	*	mg/L	0.01	0.05	10/26/04 20:22	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:10	scp
Uranium, total	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	10/30/04 7:05	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:12	wfg
Zinc, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:12	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 8:07	scp

Summo Minerals Corporation

Project ID: LISBON VALLEY

 Sample ID: MW96-7B-04-FB *Field Blank*

ACZ Sample ID: L48197-04

Date Sampled: 10/06/04 13:05

Date Received: 10/08/04

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		4	BH		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃				UH	mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃				UH	mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		4	BH	*	mg/L	2	10	10/21/04 0:00	mah
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		4	BH		mg/L	2	10	10/21/04 0:00	mah
Carbonate as CaCO ₃				UH	mg/L	2	10	10/21/04 0:00	mah
Hydroxide as CaCO ₃				UH	mg/L	2	10	10/21/04 0:00	mah
Total Alkalinity		4	BH	*	mg/L	2	10	10/21/04 0:00	mah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			12/06/04 0:00	calc
Sum of Anions				U	meq/L	0.1	0.5	12/06/04 0:00	calc
Sum of Cations				U	meq/L	0.1	0.5	12/06/04 0:00	calc
Chloride	M325.2 - Colorimetric			U	mg/L	1	5	10/21/04 16:18	ksj
Conductivity @25C	M120.1 - Meter	1	B		umhos/cm	1	10	10/21/04 16:21	mah
Fluoride	SM4500F-C			U	mg/L	0.1	0.5	10/28/04 14:08	mah
Hardness as CaCO ₃	SM2340B - Calculation			n/a					
Nitrate as N, dissolved	Calculation: NO ₃ - minus NO ₂								
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction			UH	mg/L	0.02	0.1	12/06/04 0:00	calc
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction			UH	*	mg/L	0.02	0.1	10/11/04 19:57
Nitrogen, ammonia pH (lab)	M350.1 - Automated Phenate M150.1 - Electrometric	5.5	H		mg/L	0.05	0.5	10/25/04 23:57	jjr
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric			U	units	0.1	0.1	10/21/04 16:21	mah
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric			U	mg/L	10	20	10/13/04 15:33	mah/ktd
Sulfate	M375.3 - Gravimetric			U		5	20	10/13/04 17:03	mah
TDS (calculated)	Calculation			U	mg/L	10	50	12/06/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation			n/a					calc

Summo Minerals Corporation

Project ID: LISBON VALLEY

Sample ID: MW96-7B-04-FB

Locator:

*Field Blank*ACZ Sample ID: **L48197-04**

Date Sampled: 10/06/04 13:46

Date Received: 10/08/04

Sample Matrix: *Ground Water***Radiochemistry**

Parameter	EPA Method	Result	Error(+/−)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	0.0	1.3	1.2		pCi/L	10/20/04 16:12	dbc
Prep:	Method						10/18/04 13:30	dbc
Gross Beta	M9310	0.0	2.8	4		pCi/L	10/20/04 16:12	dbc
Prep:	Method						10/18/04 13:30	dbc
Radium 226	M9315	0.22	0.2	0.6		pCi/L	10/18/04 17:23	dbc
Prep:	Method						10/13/04 11:00	dbc
Radium 228, total	M9320	1.01	0.7	1.5		pCi/L	10/19/04 12:16	dbc
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	0.7	0.3	0.22		pCi/L	10/21/04 15:19	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 230	ESM 4506	1.15 <i>J</i>	0.5	0.57	*	pCi/L	10/21/04 15:19	grb
Prep:	Method						10/19/04 9:00	grb
Thorium 232	ESM 4506	0.45	0.39	0.22		pCi/L	10/21/04 15:19	grb
Prep:	Method						10/19/04 9:00	grb

Summo Minerals Corporation

 Project ID: LISBON VALLEY
 Sample ID: MW97-12-04-R *Rinsate Blank*

 ACZ Sample ID: **L48197-06**
 Date Sampled: 10/05/04 15:10
 Date Received: 10/08/04
 Sample Matrix: *Ground Water*
Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	10/25/04 19:29	wfg
Antimony, dissolved	M200.8 ICP-MS		U		mg/L	0.0002	0.001	11/14/04 15:38	scp
Arsenic, dissolved	M200.8 ICP-MS		U		mg/L	0.0005	0.003	11/13/04 7:23	scp
Barium, dissolved	M200.7 ICP		U		mg/L	0.003	0.01	10/25/04 19:29	wfg
Beryllium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:23	scp
Cadmium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:23	scp
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	10/25/04 19:29	wfg
Chromium, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	11/13/04 7:23	scp
Copper, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:29	wfg
Iron, dissolved	M200.7 ICP	0.01	B		mg/L	0.01	0.05	10/25/04 19:29	wfg
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:23	scp
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	10/25/04 19:29	wfg
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:29	wfg
Mercury, dissolved	M245.1 CVAA	0.0003	B		mg/L	0.0002	0.001	10/29/04 13:04	jjc
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:29	wfg
Nickel, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:29	wfg
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	1	10/25/04 19:29	wfg
Selenium, dissolved	SM 3114 B, AA-Hydride		U	*	mg/L	0.001	0.005	10/28/04 19:14	ak
Silica, dissolved	M200.7 ICP		U		mg/L	0.2	0.5	10/25/04 19:29	wfg
Silver, dissolved	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	11/13/04 7:23	scp
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	1	10/25/04 19:29	wfg
Strontium, dissolved	M200.7 ICP		U	*	mg/L	0.01	0.05	10/26/04 20:30	wfg
Thallium, dissolved	M200.8 ICP-MS		U		mg/L	0.0001	0.0005	11/13/04 7:23	scp
Uranium, total	M200.8 ICP-MS		U		mg/L	5E-05	0.0003	10/30/04 7:15	scp
Vanadium, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	10/25/04 19:29	wfg
Zinc, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	10/25/04 19:29	wfg

Metals Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/26/04 7:38	scp

Summo Minerals Corporation

Project ID: LISBON VALLEY

Sample ID: MW97-12-04-R *Rinsate Blank*

ACZ Sample ID: **L48197-06**

Date Sampled: 10/05/04 15:10

Date Received: 10/08/04

Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration								
Bicarbonate as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		U			mg/L	2	10	10/15/04 0:00	nim
Alkalinity as CaCO ₃ , dissolved	SM2320B - Titration								
Bicarbonate as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Carbonate as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Hydroxide as CaCO ₃		U			mg/L	2	10	10/15/04 0:00	nim
Total Alkalinity		U			mg/L	2	10	10/15/04 0:00	nim
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			11/17/04 0:00	calc
Sum of Anions		U			meq/L	0.1	0.5	11/17/04 0:00	calc
Sum of Cations		U			meq/L	0.1	0.5	11/17/04 0:00	calc
Chloride	M325.2 - Colorimetric				mg/L	1	5	10/21/04 16:20	ksj
Conductivity @25C	M120.1 - Meter	1	B		umhos/cm	1	10	10/15/04 15:45	nim
Fluoride	SM4500F-C		U		mg/L	0.1	0.5	10/28/04 14:18	mah
Hardness as CaCO ₃	SM2340B - Calculation	n/a			mg/L	1	7	11/17/04 0:00	calc
Nitrate as N, dissolved	Calculation: NO ₃ -NO ₂ minus NO ₂		U		mg/L	0.02	0.1	11/17/04 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	10/11/04 19:59	jjr
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	10/11/04 19:59	jjr
Nitrogen, ammonia	M350.1 - Automated Phenate		U		mg/L	0.05	0.5	10/25/04 23:59	jjr
pH (lab)	M150.1 - Electrometric	5.5	H		units	0.1	0.1	10/15/04 15:45	nim
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric		UH	*	mg/L	10	20	10/13/04 15:34	mah/ktd
Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric		UH	*	mg/L	5	20	10/23/04 11:25	jah
Sulfate	M375.3 - Gravimetric		U		mg/L	10	50	10/22/04 12:26	ktd
TDS (calculated)	Calculation		U		mg/L	10	50	11/17/04 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						11/17/04 0:00	calc

Summo Minerals Corporation

Project ID: LISBON VALLEY

Sample ID: MW97-12-04-R *Rinsate Blank*

Locator:

ACZ Sample ID: **L48197-06**

Date Sampled: 10/05/04 15:10

Date Received: 10/08/04

Sample Matrix: *Ground Water***Radiochemistry**

Parameter	EPA Method	Result	Error(+/−)	LLD	XQ	Units	Date	Analyst
Gross Alpha	M9310	0.0	1.1	1.2		pCi/L	10/20/04 16:15	dbc
Prep:	Method						10/18/04 13:30	dbc
Gross Beta	M9310	5.54	2.9	3.9		pCi/L	10/20/04 16:15	dbc
Prep:	Method						10/18/04 13:30	dbc
Radium 226	M9315	0.0	0.13	0.46		pCi/L	10/18/04 17:26	dbc
Prep:	Method						10/13/04 11:00	dbc
Radium 228, total	M9320	0.35	0.7	1.4		pCi/L	10/19/04 12:19	dbc
Prep:	Method						10/15/04 15:00	grb
Thorium 228	ESM 4506	0.0	0.2	0.22		pCi/L	10/28/04 9:33	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 230	ESM 4506	-0.12	0.34	0.57	*	pCi/L	10/28/04 9:33	grb
Prep:	Method						10/26/04 10:00	grb
Thorium 232	ESM 4506	-0.13	0.29	0.22		pCi/L	10/28/04 9:33	grb
Prep:	Method						10/26/04 10:00	grb

Attachment B
Analytical Data QC Review And Laboratory Data Sheets

Part 3 – Laboratory QA/QC Packages

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

Charles F. Bauer
Summo Minerals Corporation
565 Powderhorn Drive
Monument, CO 80132

December 06, 2004

Project ID: LISBON VALLEY
ACZ Project ID: L48197

Charles F. Bauer:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 08, 2004 and reported on November 17, 2004. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L48197. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 11.0. The enclosed results relate only to the samples received under L48197. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Please assess the enclosed report only in its entirety. ACZ prohibits the reproduction of this report, except in full, without the written approval of ACZ. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 17, 2004. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

06/Dec/04

Sue Barkey, Project Manager, has reviewed and approved this report in its entirety.



ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80481 (800) 334-5493

Case Narrative

Summo Minerals Corporation

December 06, 2004

Project ID: LISBON VALLEY

ACZ Project ID: L48197

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 14 ground water samples from Summo Minerals Corporation on October 8, 2004. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L48197. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were not performed within EPA recommended holding times.

1. The Nitrate/Nitrite samples flagged with an "H1" were received either after the hold time expired or too close to the hold time of 48 hours and were analyzed after they expired.
2. TDS samples flagged with an "H1" were received with a limited amount of the hold time remaining and we were unable to analyze them within the hold time due to scheduling conflicts.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following anomaly required further explanation not provided by the Extended Qualifier Report:

1. For Thorium 230, the duplicate precision (RER) was over the control limits in WG180384 at 1.75. An additional duplicate was run in this workgroup and was within control limits at .84. The upper limit is 1.0.
2. For Thorium 230, the duplicate precision (RER) was over the control limits in WG180772 at 1.09. An additional duplicate was run in this workgroup and was within control limits at .21. The upper limit is 1.0.

This report was regenerated to report retested alkalinity, pH and conductivity for sample L48197-05. Also, for samples -03 and -04, the bottles were switched in login. The IDs have been switched and the report was revised to reflect the change. No other changes were made.

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Vерifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality control sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Summo Minerals Corporation

 ACZ Project ID: **L48197**

 Project ID: **LISBON VALLEY**
Alkalinity as CaCO₃
2320B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179857													
WG179857LCSW2	LCSW	10/15/04 11:06	WC041008-3	82		79.6	mg/L	97.1	80	120			
WG179857LCSW5	LCSW	10/15/04 14:12	WC041008-3	82		84.9	mg/L	103.5	80	120			
L48197-14DUP	DUP	10/15/04 16:56			352	349.8	mg/L				0.6	20	
WG179857LCSW8	LCSW	10/15/04 17:05	WC041008-3	82		82.4	mg/L	100.5	80	120			
WG180209													
WG180209LCSW2	LCSW	10/21/04 14:01	WC041020-2	82		97.1	mg/L	118.4	80	120			
L48197-02DUP	DUP	10/21/04 16:08			551	541.1	mg/L				1.8	20	
L48233-05DUP	DUP	10/21/04 17:17			49	47.6	mg/L				2.9	20	
WG180209LCSW5	LCSW	10/21/04 17:24	WC041020-2	82		83.4	mg/L	101.7	80	120			
WG182373													
WG182373LCSW2	LCSW	12/04/04 12:40	WC041124-3	82		81.7	mg/L	99.6	80	120			
L48824-02DUP	DUP	12/04/04 14:33			U	U	mg/L				0	20	
WG182373LCSW5	LCSW	12/04/04 15:41	WC041124-3	82		81.1	mg/L	98.9	80	120			
WG182373LCSW8	LCSW	12/04/04 17:45	WC041124-3	82		83.6	mg/L	102	80	120			

Aluminum, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		2.022	mg/L	101.1	95	105			
WG180375ICB	ICB	10/25/04 18:27				U	mg/L		-0.03	0.03			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	1		.998	mg/L	99.8	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	1	U	1.027	mg/L	102.7	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	1	U	1.012	mg/L	101.2	85	115	1.47	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	1	U	1.015	mg/L	101.5	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	1	U	1.006	mg/L	100.6	85	115	0.89	20	

Antimony, dissolved
M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181471													
WG181471ICV	ICV	11/14/04 14:49	MS041112-2	.05		.04676	mg/L	93.5	90	110			
WG181471ICB	ICB	11/14/04 14:54				.00025	mg/L		-0.00044	0.00044			
WG181471LFB	LFB	11/14/04 14:58	MS041107-4	.00625		.00659	mg/L	105.4	85	115			
L48197-01AS	AS	11/14/04 15:08	MS041107-4	.00625	.0006	.00575	mg/L	82.4	70	130			
L48197-01ASD	ASD	11/14/04 15:13	MS041107-4	.00625	.0006	.00574	mg/L	82.2	70	130	0.17	20	
L48197-11AS	AS	11/14/04 16:17	MS041107-4	.00625	.0005	.00551	mg/L	80.2	70	130			
L48197-11ASD	ASD	11/14/04 16:22	MS041107-4	.00625	.0005	.00558	mg/L	81.3	70	130	1.26	20	

Summo Minerals Corporation

 ACZ Project ID: **L48197**

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Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05268	mg/L	105.4	90	110			
WG181396ICB	ICB	11/13/04 6:23			U	mg/L		-0.0011	0.0011				
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.04826	mg/L	96.5	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	.0205	.07194	mg/L	102.9	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	.0205	.06934	mg/L	97.7	70	130	3.68	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	.0021	.05557	mg/L	106.9	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	.0021	.05504	mg/L	105.9	70	130	0.96	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		1.938	mg/L	96.9	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L		-0.003	0.003				
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.4955	mg/L	99.1	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	.085	.5896	mg/L	100.9	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	.085	.5807	mg/L	99.1	85	115	1.52	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	.046	.5443	mg/L	99.7	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	.046	.532	mg/L	97.2	85	115	2.29	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05235	mg/L	104.7	90	110			
WG181396ICB	ICB	11/13/04 6:23			U	mg/L		-0.00022	0.00022				
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.04832	mg/L	96.6	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	U	.04922	mg/L	98.4	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	U	.05017	mg/L	100.3	70	130	1.91	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	U	.0508	mg/L	101.6	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	U	.05087	mg/L	101.7	70	130	0.14	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05259	mg/L	105.2	90	110			
WG181396ICB	ICB	11/13/04 6:23			U	mg/L		-0.00022	0.00022				
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.04967	mg/L	99.3	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	.0002	.04897	mg/L	97.5	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	.0002	.04966	mg/L	98.9	70	130	1.4	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	U	.04998	mg/L	100	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	U	.04967	mg/L	99.3	70	130	0.62	20	

Summo Minerals Corporation

 ACZ Project ID: **L48197**

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Calcium, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	100		97.09	mg/L	97.1	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L		-0.2	0.2				
WG180375LFB	LFB	10/25/04 18:45	II041015-12	67.96136		66.56	mg/L	97.9	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	67.96136	74.3	138.02	mg/L	93.8	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	67.96136	74.3	136.61	mg/L	91.7	85	115	1.03	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	67.96136	56.3	121.29	mg/L	95.6	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	67.96136	56.3	119.3	mg/L	92.7	85	115	1.65	20	

Chloride
M325.2 - Colorimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180204													
WG180204ICV	ICV	10/21/04 16:04	WI040811-7	55		57	mg/L	103.6	97.8	111.8			
WG180204ICB	ICB	10/21/04 16:05			U	mg/L		-1	1				
WG180204LFB1	LFB	10/21/04 16:06	WI040902-2	30		31.5	mg/L	105	94.1	110.5			
L48049-02DUP	DUP	10/21/04 16:08			13	13.5	mg/L				3.8	20	
L48094-01AS	AS	10/21/04 16:10	WI040902-2	30	5	36.2	mg/L	104	90	110			
L48197-06DUP	DUP	10/21/04 16:21			U	U	mg/L				0	20	
L48197-07AS	AS	10/21/04 16:23	WI040902-2	30	19	49.6	mg/L	102	90	110			
WG180204LFB2	LFB	10/21/04 16:33	WI040902-2	30		31.7	mg/L	105.7	94.1	110.5			

Chromium, dissolved
M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05244	mg/L	104.9	90	110			
WG181396ICB	ICB	11/13/04 6:23			U	mg/L		-0.00022	0.00022				
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.05032	mg/L	100.6	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	.0002	.04971	mg/L	99	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	.0002	.04837	mg/L	96.3	70	130	2.73	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	.0001	.05049	mg/L	100.8	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	.0001	.04977	mg/L	99.3	70	130	1.44	20	

Summo Minerals Corporation

 ACZ Project ID: **L48197**

 Project ID: **LISBON VALLEY**
Conductivity @25C
M120.1 - Meter

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179857													
WG179857LCSW1	LCSW	10/15/04 10:59	WC041008-3	1413		1392	µmhos/cm	98.5	80	120			
WG179857LCSW4	LCSW	10/15/04 14:04	WC041008-3	1413		1362	µmhos/cm	96.4	80	120			
L48197-14DUP	DUP	10/15/04 16:56			1660	1614	µmhos/cm				2.8	20	
WG179857LCSW7	LCSW	10/15/04 16:58	WC041008-3	1413		1433	µmhos/cm	101.4	80	120			
WG180209													
WG180209LCSW1	LCSW	10/21/04 13:54	WC041020-2	1413		1376	µmhos/cm	97.4	80	120			
L48197-02DUP	DUP	10/21/04 16:08			2390	2430	µmhos/cm				1.7	20	
L48233-05DUP	DUP	10/21/04 17:17			6890	6960	µmhos/cm				1	20	
WG180209LCSW4	LCSW	10/21/04 17:19	WC041020-2	1413		1301	µmhos/cm	92.1	80	120			
WG180209LCSW7	LCSW	10/21/04 19:53	WC041020-2	1413		1421	µmhos/cm	100.6	80	120			
WG182373													
WG182373LCSW1	LCSW	12/04/04 12:33	WC041124-3	1413		1481	µmhos/cm	104.8	80	120			
L48824-02DUP	DUP	12/04/04 14:33			10400	10560	µmhos/cm				1.5	20	
WG182373LCSW4	LCSW	12/04/04 15:35	WC041124-3	1413		1395	µmhos/cm	98.7	80	120			
WG182373LCSW7	LCSW	12/04/04 17:38	WC041124-3	1413		1471	µmhos/cm	104.1	80	120			

Copper, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		1.924	mg/L	96.2	95	105			
WG180375ICB	ICB	10/25/04 18:27				U	mg/L		-0.01	0.01			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.497	mg/L	99.4	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	U	.511	mg/L	102.2	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	U	.506	mg/L	101.2	85	115	0.98	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	U	.503	mg/L	100.6	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	U	.495	mg/L	99	85	115	1.6	20	

Fluoride
SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180596													
WG180596ICV	ICV	10/28/04 13:15	PCN19691	10		9.6	mg/L	96	95	105			
WG180596ICB	ICB	10/28/04 13:17				U	mg/L		-0.1	0.1			
WG180596LFB1	LFB	10/28/04 13:19	WC041015-3	5		5.03	mg/L	100.6	90	110			
L48197-08AS	AS	10/28/04 14:26	WC041015-3	5	.4	5.17	mg/L	95.4	85	115			
L48197-08DUP	DUP	10/28/04 14:28			.4	.39	mg/L				2.5	20	
WG180596LFB2	LFB	10/28/04 14:30	WC041015-3	5		4.85	mg/L	97	90	110			
L48419-01AS	AS	10/28/04 15:02	WC041015-3	5	.6	5.3	mg/L	94	85	115			
L48419-01DUP	DUP	10/28/04 15:05			.6	.56	mg/L				6.9	20	

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Iron, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		1.994	mg/L	99.7	95	105			
WG180375ICB	ICB	10/25/04 18:27			U		mg/L		-0.01	0.01			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	1		1.009	mg/L	100.9	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	1	.11	1.129	mg/L	101.9	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	1	.11	1.114	mg/L	100.4	85	115	1.34	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	1	U	1.019	mg/L	101.9	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	1	U	1.003	mg/L	100.3	85	115	1.58	20	

Lead, dissolved
M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05085	mg/L	101.7	90	110			
WG181396ICB	ICB	11/13/04 6:23			U		mg/L		-0.00022	0.00022			
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.04847	mg/L	96.9	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	.0002	.05085	mg/L	101.3	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	.0002	.05129	mg/L	102.2	70	130	0.86	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	U	.05008	mg/L	100.2	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	U	.04941	mg/L	98.8	70	130	1.35	20	

Magnesium, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	100		99.07	mg/L	99.1	95	105			
WG180375ICB	ICB	10/25/04 18:27			U		mg/L		-0.2	0.2			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	49.98652		49.83	mg/L	99.7	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	49.98652	27.5	77.66	mg/L	100.3	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	49.98652	27.5	77.07	mg/L	99.2	85	115	0.76	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	49.98652	23.6	73.84	mg/L	100.5	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	49.98652	23.6	72.64	mg/L	98.1	85	115	1.64	20	

Manganese, dissolved
M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	1.9		1.8426	mg/L	97	95	105			
WG180375ICB	ICB	10/25/04 18:27			U		mg/L		-0.005	0.005			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.4887	mg/L	97.7	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	.166	.6553	mg/L	97.9	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	.166	.6485	mg/L	96.5	85	115	1.04	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	U	.4996	mg/L	99.9	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	U	.4873	mg/L	97.5	85	115	2.49	20	

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Mercury, dissolved

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180534													
WG180534ICV	ICV	10/28/04 14:25	II041005-2	.01		.01047	mg/L	104.7	95	105			
WG180534ICB	ICB	10/28/04 14:26			U	mg/L		-0.0002	0.0002				
WG180534LRB	LRB	10/28/04 14:27			U	mg/L		-0.0002	0.0002				
WG180534LFB	LFB	10/28/04 14:28	II041015-5	.005		.00502	mg/L	100.4	85	115			
L48177-05LFM	LFM	10/28/04 14:31	II041015-5	.005	U	.0051	mg/L	102	85	115			
L48177-05LFMD	LFMD	10/28/04 14:32	II041015-5	.005	U	.00513	mg/L	102.6	85	115	0.59	20	
WG180637													
WG180637LFB	LFB	10/29/04 12:59	II041015-5	.005		.00508	mg/L	101.6	85	115			
L48197-05LFM	LFM	10/29/04 13:02	II041015-5	.005	.0002	.00549	mg/L	105.8	85	115			
L48197-05LFMD	LFMD	10/29/04 13:03	II041015-5	.005	.0002	.00546	mg/L	105.2	85	115	0.55	20	
WG180637LRB	LRB	10/29/04 14:38			U	mg/L		-0.0002	0.0002				

Molybdenum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		2.01	mg/L	100.5	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L		-0.01	0.01				
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.498	mg/L	99.6	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	.11	.618	mg/L	101.6	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	.11	.61	mg/L	100	85	115	1.3	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	U	.506	mg/L	101.2	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	U	.504	mg/L	100.8	85	115	0.4	20	

Nickel, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		1.905	mg/L	95.3	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L		-0.01	0.01				
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.483	mg/L	96.6	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	U	.488	mg/L	97.6	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	U	.488	mg/L	97.6	85	115	0	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	U	.487	mg/L	97.4	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	U	.484	mg/L	96.8	85	115	0.62	20	

Nitrate/Nitrite as N, dissolved

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179577													
WG179577ICV	ICV	10/11/04 19:14	WI040921-5	2.40826		2.552	mg/L	106	90	110			
WG179577ICB	ICB	10/11/04 19:15			U	mg/L		-0.02	0.02				
WG179577LFB1	LFB	10/11/04 19:16	WI040930-2	2		1.947	mg/L	97.4	90	110			
WG179577LFB2	LFB	10/11/04 19:44	WI040930-2	2		1.887	mg/L	94.4	90	110			
L48180-02DUP	DUP	10/11/04 19:46			.03	.025	mg/L				18.2	20	
L48180-02AS	AS	10/11/04 19:47	WI040930-2	2	.03	2.104	mg/L	103.7	90	110			
L48197-06DUP	DUP	10/11/04 20:00			U	U	mg/L				0	20	
L48197-06AS	AS	10/11/04 20:03	WI040930-2	2	U	2.024	mg/L	101.2	90	110			

Summo Minerals Corporation

 ACZ Project ID: **L48197**

 Project ID: **LISBON VALLEY**
Nitrite as N, dissolved
M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179496													
WG179496ICV	ICV	10/09/04 1:49	WI040921-5	.60922		.654	mg/L	107.4	90	110			
WG179496ICB	ICB	10/09/04 1:50				U	mg/L		-0.01	0.01			
WG179496LFB	LFB	10/09/04 1:53	WI040930-2	1		1.029	mg/L	102.9	90	110			
L48180-04AS	AS	10/09/04 2:09	WI040930-2	1	U	1.083	mg/L	108.3	90	110			
L48195-01DUP	DUP	10/09/04 2:11			U	U	mg/L				0	20	
WG179577													
WG179577ICV	ICV	10/11/04 19:14	WI040921-5	.60922		.633	mg/L	103.9	90	110			
WG179577ICB	ICB	10/11/04 19:15				U	mg/L		-0.01	0.01			
WG179577LFB1	LFB	10/11/04 19:16	WI040930-2	1		.95	mg/L	95	90	110			
WG179577LFB2	LFB	10/11/04 19:44	WI040930-2	1		.977	mg/L	97.7	90	110			
L48180-02DUP	DUP	10/11/04 19:46			U	U	mg/L				0	20	
L48180-02AS	AS	10/11/04 19:47	WI040930-2	1	U	1.047	mg/L	104.7	90	110			
L48197-06DUP	DUP	10/11/04 20:00			U	U	mg/L				0	20	
L48197-06AS	AS	10/11/04 20:03	WI040930-2	1	U	1.021	mg/L	102.1	90	110			

Nitrogen, ammonia
M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180397													
WG180397ICV	ICV	10/25/04 23:43	WI041023-1	12		12.489	mg/L	104.1	90	110			
WG180397ICB	ICB	10/25/04 23:44				U	mg/L		-0.05	0.05			
WG180397LFB1	LFB	10/25/04 23:45	WI041023-3	10		9.192	mg/L	91.9	90	110			
L48094-01DUP	DUP	10/25/04 23:47			U	U	mg/L				0	20	
L48094-01AS	AS	10/25/04 23:48	WI041023-3	10	U	10.251	mg/L	102.5	90	110			
L48197-07DUP	DUP	10/26/04 0:01			.25	.163	mg/L				42.1	20	RA
L48197-07AS	AS	10/26/04 0:02	WI041023-3	10	.25	10.072	mg/L	98.2	90	110			
WG180397LFB2	LFB	10/26/04 0:13	WI041023-3	10		9.939	mg/L	99.4	90	110			

pH (lab)
M150.1 - Electrometric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179857													
WG179857LCSW3	LCSW	10/15/04 11:10	WC041008-3	7		7.07	units	101	90	110			
WG179857LCSW6	LCSW	10/15/04 14:16	WC041008-3	7		7.05	units	100.7	90	110			
L48197-14DUP	DUP	10/15/04 16:56			7.2	7.35	units				2.1	20	
WG179857LCSW9	LCSW	10/15/04 17:09	WC041008-3	7		7.03	units	100.4	90	110			
WG180209													
WG180209LCSW3	LCSW	10/21/04 14:05	WC041020-2	7.4		7.43	units	100.4	90	110			
L48197-02DUP	DUP	10/21/04 16:08			7.4	7.43	units				0.4	20	
L48233-05DUP	DUP	10/21/04 17:17			7.6	7.74	units				1.8	20	
WG180209LCSW6	LCSW	10/21/04 17:28	WC041020-2	7.4		7.44	units	100.5	90	110			
WG182373													
WG182373LCSW3	LCSW	12/04/04 12:43	WC041124-3	6		5.99	units	99.8	90	110			
L48824-02DUP	DUP	12/04/04 14:33			3	2.96	units				1.3	20	
WG182373LCSW6	LCSW	12/04/04 15:45	WC041124-3	6		6	units	100	90	110			
WG182373LCSW9	LCSW	12/04/04 17:49	WC041124-3	6		6	units	100	90	110			

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	21.28		21.77	mg/L	102.3	95	105			
WG180375ICB	ICB	10/25/04 18:27				U	mg/L		-0.3	0.3			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	99.52064		101.32	mg/L	101.8	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	99.52064	8.5	114.96	mg/L	107	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	99.52064	8.5	113.75	mg/L	105.8	85	115	1.06	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	99.52064	2.4	107.45	mg/L	105.6	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	99.52064	2.4	105.33	mg/L	103.4	85	115	1.99	20	

Residue, Filterable (TDS) @180C

M160.1 - Gravimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179723													
WG179723PBW	PBW	10/13/04 15:30				U	mg/L		-10	10			
WG179723LCSW	LCSW	10/13/04 15:30	WC041006-2	260		288	mg/L	110.8	80	120			
L48197-10DUP	DUP	10/13/04 15:37			360	362	mg/L				0.6	20	
L48246-02DUP	DUP	10/13/04 15:44			320	312	mg/L				2.5	20	

Residue, Non-Filterable (TSS) @105C

M160.2 - Gravimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG179687													
WG179687PBW	PBW	10/13/04 17:00				U	mg/L		-5	5			
WG179687LCSW	LCSW	10/13/04 17:00	WC041006-2	160		138	mg/L	86.3	80	120			
L48218-01DUP	DUP	10/13/04 17:07			22	22	mg/L				0	20	
WG179764													
WG179764PBW	PBW	10/14/04 9:00				6	mg/L		-5	5			B7
WG179764LCSW	LCSW	10/14/04 9:01	WC041006-2	160		140	mg/L	87.5	80	120			
L48237-04DUP	DUP	10/14/04 9:29			U	U	mg/L				0	20	
WG180308													
WG180308PBW	PBW	10/23/04 11:15				U	mg/L		-5	5			
WG180308LCSW	LCSW	10/23/04 11:16	WC041018-7	160		150	mg/L	93.8	80	120			
L48197-10DUP	DUP	10/23/04 11:30			38	38	mg/L				0	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180474													
WG180474LRB	LRB	10/28/04 18:58				U	mg/L		-0.001	0.001			
WG180474LFB	LFB	10/28/04 18:59	II041005-10	.02		.0206	mg/L	103	85	115			
L48177-04LFM	LFM	10/28/04 19:02	II041005-10	.02	U	.0173	mg/L	86.5	85	115			
L48177-04LFMD	LFMD	10/28/04 19:03	II041005-10	.02	U	.0163	mg/L	81.5	85	115	5.95	20	MA
L48197-09LFM	LFM	10/28/04 19:19	II041005-10	.02	U	.0194	mg/L	97	85	115			
L48197-09LFMD	LFMD	10/28/04 19:21	II041005-10	.02	U	.0193	mg/L	96.5	85	115	0.52	20	

Summo Minerals Corporation

 ACZ Project ID: **L48197**

 Project ID: **LISBON VALLEY**
Silica, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	42.8		41.33	mg/L	96.6	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L			-0.2	0.2			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	21.4		22.27	mg/L	104.1	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	21.4	14.2	36.52	mg/L	104.3	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	21.4	14.2	36.14	mg/L	102.5	85	115	1.05	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	21.4	17.4	39.82	mg/L	104.8	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	21.4	17.4	38.98	mg/L	100.8	85	115	2.13	20	

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.04849	mg/L	97	90	110			
WG181396ICB	ICB	11/13/04 6:23			U	mg/L			-0.00011	0.00011			
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.0125		.01267	mg/L	101.4	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.0125	U	.01083	mg/L	86.6	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.0125	U	.01012	mg/L	81	70	130	6.78	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.0125	U	.01137	mg/L	91	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.0125	U	.01125	mg/L	90	70	130	1.06	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	100		99.95	mg/L	100	95	105			
WG180375ICB	ICB	10/25/04 18:27			U	mg/L			-0.3	0.3			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	99.90786		103.31	mg/L	103.4	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	99.90786	118	219.19	mg/L	101.3	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	99.90786	118	216.96	mg/L	99.1	85	115	1.02	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	99.90786	41	145.49	mg/L	104.6	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	99.90786	41	142.25	mg/L	101.3	85	115	2.25	20	

Strontium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180489													
WG180489ICV	ICV	10/26/04 19:10	II041020-1	2		1.945	mg/L	97.3	95	105			
WG180489ICB	ICB	10/26/04 19:15			U	mg/L			-0.01	0.01			
WG180489LFB	LFB	10/26/04 19:33	II041015-12	.5		.523	mg/L	104.6	85	115			
L48197-01AS	AS	10/26/04 19:55	II041015-12	.5	3.09	3.544	mg/L	90.8	85	115			
L48197-01ASD	ASD	10/26/04 19:59	II041015-12	.5	3.09	3.485	mg/L	79	85	115	1.68	20	MA
L48197-11AS	AS	10/26/04 21:06	II041015-12	.5	1.58	2.033	mg/L	90.6	85	115			
L48197-11ASD	ASD	10/26/04 21:10	II041015-12	.5	1.58	2.012	mg/L	86.4	85	115	1.04	20	

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Sulfate M375.3 - Gravimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180261													
WG180261PBW	PBW	10/22/04 10:00				U	mg/L		-10	10			
WG180261LCSW	LCSW	10/22/04 10:10	WC040722-1	100		107	mg/L	107	80	120			
L48096-05DUP	DUP	10/22/04 11:13			570	570	mg/L				0	20	
L48197-11DUP	DUP	10/22/04 13:28			140	151	mg/L				7.6	20	

Thallium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG181396													
WG181396ICV	ICV	11/13/04 6:17	MS041022-3	.05		.05126	mg/L	102.5	90	110			
WG181396ICB	ICB	11/13/04 6:23				U	mg/L		-0.00022	0.00022			
WG181396LFB	LFB	11/13/04 6:30	MS041107-4	.05		.04737	mg/L	94.7	85	115			
L48197-01AS	AS	11/13/04 6:43	MS041107-4	.05	.0001	.05026	mg/L	100.3	70	130			
L48197-01ASD	ASD	11/13/04 6:50	MS041107-4	.05	.0001	.05043	mg/L	100.7	70	130	0.34	20	
L48197-11AS	AS	11/13/04 8:16	MS041107-4	.05	U	.04923	mg/L	98.5	70	130			
L48197-11ASD	ASD	11/13/04 8:23	MS041107-4	.05	U	.04883	mg/L	97.7	70	130	0.82	20	

Uranium, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180689													
WG180689ICV	ICV	10/30/04 5:46	MS041022-3	.05		.05204	mg/L	104.1	90	110			
WG180689ICB	ICB	10/30/04 5:51				U	mg/L		-0.00011	0.00011			
WG180430LRB	LRB	10/30/04 5:56				U	mg/L		-0.00011	0.00011			
WG180430LFB	LFB	10/30/04 6:01	MS041014-2	.025		.02454	mg/L	98.2	85	115			
L48161-02LFM	LFM	10/30/04 6:16	MS041014-2	.025	.00254	.02817	mg/L	102.5	70	130			
L48161-02LFMD	LFMD	10/30/04 6:21	MS041014-2	.025	.00254	.02778	mg/L	101	70	130	1.39	20	
L48197-06LFM	LFM	10/30/04 7:20	MS041014-2	.025	U	.02429	mg/L	97.2	70	130			
L48197-06LFMD	LFMD	10/30/04 7:25	MS041014-2	.025	U	.0233	mg/L	93.2	70	130	4.16	20	

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	I041020-1	2		1.9918	mg/L	99.6	95	105			
WG180375ICB	ICB	10/25/04 18:27				U	mg/L		-0.005	0.005			
WG180375LFB	LFB	10/25/04 18:45	I041015-12	.5		.4965	mg/L	99.3	85	115			
L48197-01AS	AS	10/25/04 18:54	I041015-12	.5	U	.5083	mg/L	101.7	85	115			
L48197-01ASD	ASD	10/25/04 18:58	I041015-12	.5	U	.5028	mg/L	100.6	85	115	1.09	20	
L48197-11AS	AS	10/25/04 19:56	I041015-12	.5	U	.5057	mg/L	101.1	85	115			
L48197-11ASD	ASD	10/25/04 20:00	I041015-12	.5	U	.5003	mg/L	100.1	85	115	1.07	20	

Summo Minerals CorporationACZ Project ID: **L48197**Project ID: **LISBON VALLEY****Zinc, dissolved****M200.7 ICP**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG180375													
WG180375ICV	ICV	10/25/04 18:23	II041020-1	2		1.916	mg/L	95.8	95	105			
WG180375ICB	ICB	10/25/04 18:27			U		mg/L		-0.01	0.01			
WG180375LFB	LFB	10/25/04 18:45	II041015-12	.5		.501	mg/L	100.2	85	115			
L48197-01AS	AS	10/25/04 18:54	II041015-12	.5	.01	.52	mg/L	102	85	115			
L48197-01ASD	ASD	10/25/04 18:58	II041015-12	.5	.01	.51	mg/L	100	85	115	1.94	20	
L48197-11AS	AS	10/25/04 19:56	II041015-12	.5	.01	.518	mg/L	101.6	85	115			
L48197-11ASD	ASD	10/25/04 20:00	II041015-12	.5	.01	.513	mg/L	100.6	85	115	0.97	20	

Summo Minerals Corporation
ACZ Project ID: L48197

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L48197-01	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
	WG180209	Total Alkalinity	SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
			SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
	WG181471	Antimony, dissolved	M200.8 ICP-MS	E6	Concentration estimated. Internal standard recoveries did not meet method acceptance criteria.
	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
L48197-02	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
	WG180209	Total Alkalinity	SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
			SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
L48197-03		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180209	Total Alkalinity	SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
			SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.

Summo Minerals Corporation

ACZ Project ID: L48197

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L48197-04	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180209	Total Alkalinity	SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
			SM2320B - Titration	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
L48197-05	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG182373	Conductivity @25C	M120.1 - Meter	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179764	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	B7	Target analyte detected in method blank at or above method reporting limit. Sample value was > 10X the concentration in the method blank.
			M160.2 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
			M160.2 - Gravimetric	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG182373	Total Alkalinity	SM2320B - Titration	C4	Confirmatory analysis was past holding time.
			SM2320B - Titration	C4	Confirmatory analysis was past holding time.
L48197-06	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.

Summo Minerals Corporation

ACZ Project ID: L48197

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL.	DESCRIPTION
L48197-07	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
L48197-08	WG180474	Selenium, dissolved	SM 3114 B, AA-Hydride	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.
L48197-09	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179764	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	B7	Target analyte detected in method blank at or above method reporting limit. Sample value was > 10X the concentration in the method blank.
			M160.2 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
L48197-10	WG180489	Strontium, dissolved	M200.7 ICP	MA	One spike recovery was outside of the acceptance limits; the duplicate spike recovery and the RPD were within the acceptance limits.
	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG180308	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	HC	Initial analysis within holding time. Reanalysis was past holding time which was required due to a QC failure during the initial analysis.

Summo Minerals CorporationACZ Project ID: **L48197**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L48197-11	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
L48197-12	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
L48197-13	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
	WG179723	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
	WG179764	Residue, Non-Filterable (TSS) @105C	M160.2 - Gravimetric	B7	Target analyte detected in method blank at or above method reporting limit. Sample value was > 10X the concentration in the method blank.
			M160.2 - Gravimetric	H1	Sample analysis performed past holding time. See Case Narrative.
L48197-14	WG179577	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H1	Sample analysis performed past holding time. See Case Narrative.
	WG180397	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Error(+/-)</i>	Calculated sample specific uncertainty
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>LCL</i>	Lower Control Limit, in % (except for LCSS, mg/Kg)
<i>LLD</i>	Calculated sample specific Lower Limit of Detection
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RER</i>	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
<i>UCL</i>	Upper Control Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>DUP</i>	Sample Duplicate	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBS</i>	Prep Blank - Soil
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBW</i>	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

<i>H</i>	Analysis exceeded method hold time.
<i>R</i>	Poor spike recovery accepted because the other spike in the set fell within the given limits.
<i>T</i>	High Replicate Error Ratio (RER) accepted because sample concentrations are less than 10x the MDL.
<i>U</i>	No nuclides detected above the Lower Limit of Detection (LLD)
<i>V</i>	High blank data accepted because sample concentration is 10 times higher than blank concentration
<i>X</i>	QC is out of control. See Case Narrative.
<i>Z</i>	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.

Method Prefix Reference

<i>M</i>	EPA methodology, including those under SDWA, CWA, and RCRA
<i>SM</i>	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.
<i>D</i>	ASTM
<i>RP</i>	DOE
<i>ESM</i>	DOE/ESM

Comments

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Alpha

M9310

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RER	Limit	Qual
WG180309																
WG179902PBW	PBW	10/20/04						0	1.5	1.2			2.4			
WG179902LCSW	LCSW	10/20/04	RC040501-1	81.06				72.3	6.6	1.2	89.2	64	104			
L48197-01DUP	DUP	10/20/04			7.17	4.8	3	11.3	5	3.1			0.4	1.0		
L48131-05DUP	DUP	10/20/04			4.01	3	2.2	2.14	2.7	2.3			0.32	1.0		
L48197-04MS	MS	10/20/04	RC040501-1	81.06	0	1.3	1.2	74.1	6.9	1.2	91.4	43	142			
WG180953																
WG180540PBW	PBW	11/01/04						.69	1.3	1.2			2.4			
WG180540LCSW	LCSW	11/01/04	RC040501-1	81.06				67.1	6.4	1.2	82.8	64	104			
L48226-02DUP	DUP	11/01/04			0	3.4	2.9	3.82	4.1	2.9			0.51	1.0		
L48226-03DUP	DUP	11/01/04			0	2.2	2.2	.33	2.7	2.3			0.07	1.0		
L48226-04MS	MS	11/01/04	RC040501-1	81.06	0	1.9	2.4	69.1	9.9	2.5	85.2	43	142			

Beta

M9310

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RER	Limit	Qual
WG180309																
WG179902PBW	PBW	10/20/04						2.06	3.2	4.2			8.4			
WG179902LCSW	LCSW	10/20/04	PCN20566	100.1				99.6	6.6	3.9	99.5	83	123			
L48197-01DUP	DUP	10/20/04			15.6	4.3	4.7	13.2	3.7	4.3			0.26	1.0		
L48131-05DUP	DUP	10/20/04			9.49	3.6	4.1	5.9	3.4	4.1			0.49	1.0		
L48243-03MS	MS	10/20/04	PCN20566	100.1	5.24	3.1	4.1	98.2	6.9	4.4	92.9	71	128			
WG180953																
WG180540PBW	PBW	11/01/04						0	3	4.2			8.4			
WG180540LCSW	LCSW	11/01/04	PCN20566	100.1				91.6	6.2	3.9	91.5	83	123			
L48226-02DUP	DUP	11/01/04			2.51	3.4	4.4	2.38	3.4	4.2			0.02	1.0		
L48226-03DUP	DUP	11/01/04			2.32	2.8	4.1	0	3.3	4.2			0.38	1.0		
L48226-05MS	MS	11/01/04	PCN20566	100.1	0.77	3.1	4.1	96.6	6.9	4.4	95.7	71	128			

Radium 226

M9315

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RER	Limit	Qual
WG180053																
WG179658PBW	PBW	10/18/04						.06	0.13	0.42			1.4			
WG179658LCSW	LCSW	10/18/04	RC040317-1	18.52				20.1	1	0.44	108.6	65	142			
L47961-07DUP	DUP	10/18/04			0.03	0.13	0.41	.08	0.13	0.4			0.19	1.0		
L48197-01DUP	DUP	10/18/04			1.7	0.3	0.41	1.12	0.25	0.38			0.83	1.0		
L48197-02MS	MS	10/18/04	RC040317-1	18.52	1.55	0.26	0.34	17.7	0.84	0.35	87.2	57	145			
WG180461																
WG180014PBW	PBW	10/25/04						.02	0.13	0.46			1.4			
WG180014LCSW	LCSW	10/25/04	RC041016-1	18.52				19.6	0.97	0.42	105.9	65	142			
L48175-04DUP	DUP	10/25/04			0.15	0.15	0.46	.04	0.14	0.44			0.38	1.0		
L48186-05DUP	DUP	10/25/04			0.17	0.15	0.43	.06	0.13	0.41			0.39	1.0		
L48175-06MS	MS	10/25/04	RC041016-1	18.52	0.07	0.18	0.59	19.2	0.94	0.4	103.3	57	145			

Summo Minerals Corporation

ACZ Project ID: L48197

Project ID: LISBON VALLEY

Radium 228, total

M9320

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	tLLD	Rec	Lower	Upper	RER	Limit	Qual
WG180091																
WG1798005PBW	PBW	10/19/04						1.12	0.75	1.5			2			
WG179805LCSW	LCSW	10/19/04	RC040810-1	10.16				9.09	1.1	1.5	89.5	52	180			
L48175-01DUP	DUP	10/19/04			1.22	0.73	1.5	.15	0.59	1.3				0.8	1.0	
L48175-02DUP	DUP	10/19/04			1.28	0.71	1.5	.55	0.61	1.3				0.54	1.0	
L48175-03MS	MS	10/19/04	RC040810-1	10.16	1.51	0.71	1.4	9.91	0.99	1.3	82.7	57	145			
WG180524																
WG180184PBW	PBW	10/26/04						.13	0.7	1.5			2			
WG180184LCSW	LCSW	10/26/04	RC040810-1	10.13				7.98	1	1.5	78.7	52	180			
L48186-07DUP	DUP	10/26/04			1.9	0.8	1.6	1.04	0.78	1.7				0.52	1.0	
L48197-09DUP	DUP	10/26/04			2.04	0.78	1.6	3.48	0.87	1.7				0.78	1.0	
L48197-14MS	MS	10/26/04	RC040810-1	10.13	2.82	0.88	1.7	14	1.2	1.7	110.3	57	145			

Thorium 230

ESM 4506

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	tLLD	Rec	Lower	Upper	RER	Limit	Qual
WG180384																
WG180038PBW	PBW	10/21/04						-.18	0.3	0.52			1.04			
WG180038LCSW	LCSW	10/21/04	RC041013-1	162.12				157	4.1	0.55	96.8	70	130			
L47896-01DUP	DUP	10/21/04			0.81	0.45	0.54	.15	0.32	0.48				0.84	1.0	
L47896-02DUP	DUP	10/21/04			0.68	0.38	0.47	-.46	0.25	0.53				1.75	1.0	RB
L48060-01MS	MS	10/21/04	RC041013-1	162.12	-0.42	0.31	0.61	146	3.8	0.52	90.3	65	135			
WG180772																
WG180362PBW	PBW	10/28/04						.27	0.39	0.56			1.12			
WG180362LCSW	LCSW	10/28/04	RC031119-2	162.12				155	4.2	0.59	95.6	70	130			
L48291-01DUP	DUP	10/28/04			-0.25	0.36	0.64	-.1	0.36	0.61				0.21	1.0	
L48291-02DUP	DUP	10/28/04			0.81	0.61	0.8	-.23	0.33	0.59				1.09	1.0	RB
L48291-03MS	MS	10/28/04	RC031119-2	162.12	0.15	0.52	0.8	150	4.1	0.58	92.4	65	135			

Summo Minerals CorporationACZ Project ID: **L48197**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L48197-01	WG180384	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-02	WG180384	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-03	WG180384	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-04	WG180384	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-05	WG180384	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-06	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-07	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-08	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-09	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-10	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-11	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-12	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-13	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.
L48197-14	WG180772	Thorium 230	ESM 4506	RB	Replicate Error Ratio exceeded limit of 1.0. See Case Narrative.

**Summo Minerals Corporation
LISBON VALLEY**

ACZ Project ID: L48197
Date Received: 10/8/2004
Received By:

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
X		
	X	
X		
X		
X		
X		
	X	
X		
	X	
	X	
		X

Exceptions: If you answered no to any of the above questions, please describe

Nitrate/nitrite past hold times for all except number eight.

Contact: (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (μR/hr)
ACZ	4.5	14
ACZ	4.3	14
ACZ	1.5	13
ACZ	2.3	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

TOTAL OF 7 COOLERS SENT.

**Summo Minerals Corporation
LISBON VALLEY**

ACZ Project ID: L48197
Date Received: 10/8/2004
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	Y < 2	YG < 2	B < 2	BG < 2	O < 2	T > 12	P > 12	N/A	RAD
L48197-01	MW97-13-04-01	Y	Y	Y								
L48197-02	MW2A-04-1	Y	Y	Y								
L48197-03	MW96-7B-04-1	Y	Y	Y								
L48197-04	MW96-7B-04-FB	Y	Y	Y								
L48197-05	MW97-12-04-1	Y	Y	Y								
L48197-06	MW97-12-04-R	Y	Y	Y								
L48197-07	SLV3-04-1	Y	Y	Y								
L48197-08	SLV3-04-D	Y	Y	Y								
L48197-09	94MW2-04-1	Y	Y	Y								
L48197-10	MW97-9-04-1	Y	Y	Y								
L48197-11	SLV2-04-1	Y	Y	Y								
L48197-12	MW97-11-04-1	Y	Y	Y								
L48197-13	SLV1A-04-1	Y	Y	Y								
L48197-14	MW96-7A-04-1	Y	Y	Y								

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BG	Filtered/Sulfuric	BLUE GLASS	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 μ R/hr

This page is a reference page used to track documents internally for the Division of Oil, Gas and Mining

Mine Permit Number M0370088 Mine Name Lisbon Valley
Operator Lisbon Valley mining Date January 25, 2005
TO _____ FROM _____

CONFIDENTIAL BOND CLOSURE LARGE MAPS EXPANDABLE
 MULTIPUL DOCUMENT TRACKING SHEET NEW APPROVED NOI
 AMENDMENT OTHER

Description YEAR-Record Number

NOI Incoming Outgoing Internal Superceded

2004 Annual Groundwater Results
Groundwater Quality Monitoring Report

NOI Incoming Outgoing Internal Superceded

NOI Incoming Outgoing Internal Superceded

NOI Incoming Outgoing Internal Superceded

TEXT/ 81/2 X 11 MAP PAGES 11 X 17 MAPS LARGE MAP

COMMENTS: _____

CC: _____